ARCHITECTVRE*

Published by Charles Scribner's Sons

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Vol. XLIX. No. 1

CONTENTS

JANUARY, 1924

TEXT PAGES

PLATES AND ILLUSTRATIONS

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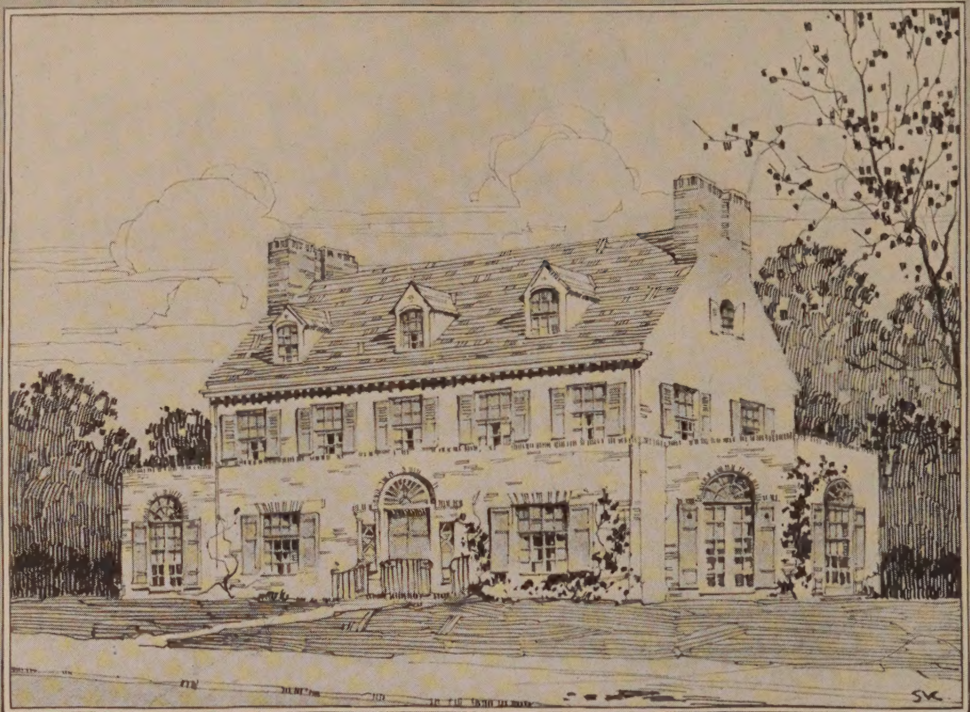

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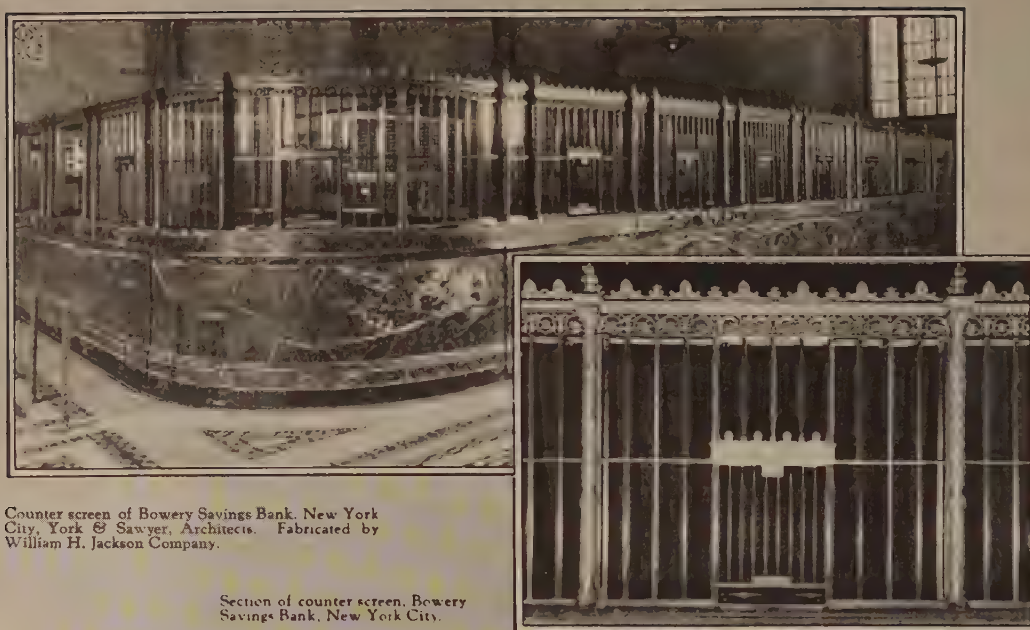
M. F. RYAN



Counter screen of Bowery Savings Bank, New York City, York & Sawyer, Architects. Fabricated by William H. Jackson Company.

Section of counter screen, Bowery Savings Bank, New York City.

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THE TEMPLE, ITS ALTAR. THE SAINT–GAUDENS MEMORIAL, CORNISH, N. H.

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The Saint-Gaudens Memorial

By Adeline Adams

Illustrated with Photographs by Mattie Edwards Hewitt

Altar containing the ashes of Augustus Saint-Gaudens, his brother Louis, and a beloved grandchild.

"WE loved every hour in the New Hampshire hills," said a California teacher, "but the best hours of all were those we spent at Aspet, the Saint-Gaudens Memorial. We saw the works, and the house, and the temple. It was an experience to cherish as a very beautiful part of one's equipment for the business of teaching." What more significant and penetrating comment could be made on the influence of the Saint-Gaudens Museum?

The works, and the house, and the temple: few museums in the world can offer so comprehensive yet so intimate a memorial to a great artist. But works, house, and temple are by no means the whole story at Aspet. These things, important as they are, are held together and dedicated anew by the very atmosphere in which they have their being. This atmosphere is not quite like any other. The Cornish of Saint-Gaudens was very far from Main Street, or Fifth Avenue, and perhaps by so much the nearer to paradise. Certainly the towering personality of the man is the chief, but not the only, element in the Aspet scene. His friends in many arts gave their counsel in shaping the whole. And nature herself, with a beauty now lavish, now austere, according to the seasons' march, offered here an inspiring background for whatever art might accomplish.

The site at Aspet is an ample, grassy, forest-fringed plateau, such as would have delighted the heart of a Le Nôtre or a Raphael; New England sometimes has an unexpected way of offering you both France and Italy in one priceless plot. An enchanting sky-line of undulating hills crowned by one fair mountain gives constant change of color and even of form to the rim of this Aspet world. Saint-Gaudens was at first merely a tenant here. Since he was creating a Lincoln statue, his friend and landlord, Mr. C. C. Beaman, had jocosely held out the inducement that there were plenty of Lincoln-shaped men in these parts. This proved to be true.

After living awhile on the half-ruined estate, the sculptor loved it and bought it. He named it Aspet, from his father's birthplace in Southern France. By slow degrees and with the best artistic counsel, he brought it to its present beauty. The manse itself was a solidly built road-house, with square-browed rooms, biddable chip-carved fireplaces, and a ballroom top story, all fallen upon evil days as a haunt for wood-choppers. Dating from the earliest part of the nineteenth century, it readily lent itself to the classic hand of Mr. George Babb, perfectionist among architects, a man better known to artists than to the public.

Set on a terrace, the house as seen to-day is of the well-known Noah's-ark type, but broader in the beam. It has a pair of rabbit-ear chimneys at each of its two gable ends, and wide porches with columns and balustrades. All is white; everywhere vines, shrubs, and trees gladden this classic whiteness. The Lombardy poplars in particular are very happily placed; by good luck, they have nothing of that starveling look that sometimes comes to poplars in our climate.

Within doors as without, nearly everything remains as

Rear of house and garden.

The Little Studio, or Studio of the Pergola, brought into harmony with the house by the use of porch and columns.

in the sculptor's lifetime. The drawing-room walls are still dim golden in tone. The furniture and tapestries, the Turin bronze and the Japanese prints are in their old places. The familiar silken window curtains of "evening-sky peach-bloom" and the rose-red lamp-shades still tell of Saint-Gaudens's passion for color. Had he not been an artist born and trained, he might have been one of those men who delight in any color, as long as it's red. Beyond the many-paned windows lie many-colored gardens; marble steps lead to a brick walk, and so to the fountain of the piping Pan, with an exedra shaded by birches. Close at hand is "the little studio," so-called to distinguish it from another and a much larger structure, rebuilt after a disastrous fire.

Little it is not. It was remodelled from the road-house stable, no doubt of ample dimensions, as was suited to stage-coach days. Partly by means of wide vine-clad porches with white columns, its exterior has been brought into perfect harmony with that of the house. Perhaps the "little studio" ought rather to be styled the studio of the pergola; or else, better yet, the studio of the master, since here he lived and worked more or less apart from the studio assistants and their cheerful tribal hurly-burly.

Here we shall still see his desk and books and papers, much as he left them. The ancient panelled French cabinet still keeps its secrets. The billiard-table is at present doing its bit by supporting a number of reliefs and studies. At the opposite end of the room, and just above the fireplace, is a copy of the stele of Hegeso, a work dear to Saint-Gaudens as to all who give their hearts to pure form. Higher yet hangs a large print of Raphael's Jurisprudence, so called, the composition which to Kenyon Cox seemed perhaps the most perfect piece of design in the world. Here and there are prints from Holbein, a little cast of a cat or a bird by Barye or Frémiet, a great circular cast of a Michelangelo Madonna, a bit of Gothic carving, a crucifix, a bell, a banderole, a wreath, a pair of eagle's wings; things that an artist loves or likes or uses, for reasons of his own. There are even things here that the owner himself might whimsically describe as "*magnifique et pas cher*." They do not detract from the dignity of the place; on the contrary, they stamp it as a true workshop. Surely the visitor who can tarry awhile among an artist's masterpieces in the secret yet homely place of their creation and growth, will not go away empty-minded.

Casts of Saint-Gaudens's hands are in this room. He himself was an eager student of what may be called the physiognomy of hands. It is significant of his mind that often in his work the hand means almost as much as the head. Sometimes, as for the hands in the Peter Cooper statue, he made scores of studies, all varying in position, gesture, emphasis. It was like Flaubert's quest of the *mot juste*. Above the hands is a study of Doctor McCosh's scholarly head; facing this, and showing a type entirely opposite yet equally individualized, is the bronze bust of Sherman, one of the world's masterpieces of portraiture; realism indeed, but realism exalted to its heights, not dragged to its depths. A bronze reduction of Chicago's Standing Lincoln is near; and the plaster reduction of the Sherman Victory, as seen in the illustration, has lately been replaced by a gilded bronze copy, gift of the late Charles D. Norton. Above these bronzes is a full-size plaster cast of the Edinburgh Stevenson. It is hoped that before long this, too, may be replaced by a bronze.

Well shown against the pleasant wood-color of the high wainscot are many bronze reliefs; the Amor-Caritas, the great plaque of the Golden Bowl, the portrait of the artist's wife. Here, too, is Miss Violet Sargent as a lovely guitar-

The Little Studio: ample porch from which one looks toward Ascutney.

playing débutante, the work made in exchange for John Sargent's portrait of the boy Homer Saint-Gaudens. Flanking the fireplace are the Morgan figures, never brought to completion as designed, yet attaining immortality as prototypes of the Saint-Gaudens Angel, long an influence in our imaginative sculpture. Near the door by which we leave this room is the relief portrait of Mrs. Stanford White, a small work, yet incomparable in spiritual radiance.

At a little distance from this studio, rich in souvenirs of the artist's friendships, we come upon the studio of the caryatids, that larger, newer building in which the monumental side of his achievement is best to be studied. The Albright caryatids at the door are the last great works to which he gave his mind. "This doing something to recall the Erechtheum," he writes, "seems so presumptuous. However, we shall see." And much later: "They have made good progress, I suppose on account of the years of thought, and the years of preliminary studies devoted to them." These majestic figures prepare the eye for what the building contains within its four separate studios.

The Studio of the Caryatids.

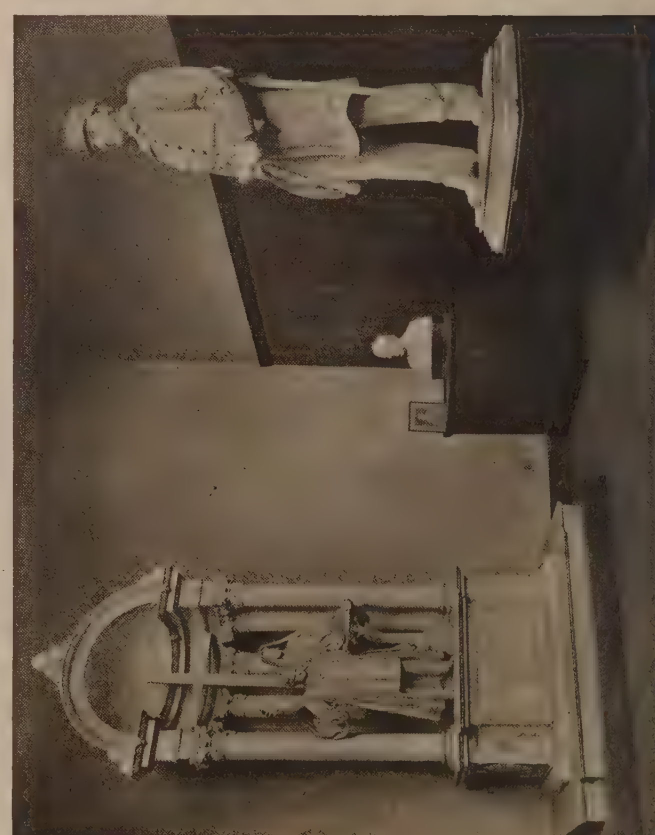
The largest of these is dominated by the great Lincoln. There is space also for some of the monumental reliefs—the Bellows, the McCosh, the Garfield—as well as for a fairly complete group of the portrait reliefs, either in full size or in reductions. Opposite the Lincoln, the Sherman Victory reigns supreme in monumental beauty. This figure is of the full size. It turns easily, so that its every silhouette may be studied. The half-size model of the whole Sherman monument is in the adjoining studio, as are other casts, including a copy of the Springfield Puritan, powerful evocation of New England righteousness.

In yet another room are shown the Farragut figure, a model of the Brooks monument, a cast of the Whistler stele, and a series of studies for our coinage. These last may seem to be among the least. But had this sculptor done nothing else in his whole life, it would still have been a

The Little Studio, the sculptor's workroom.

The Springfield Puritan, full size, and the model for the Sherman Equestrian, half size.

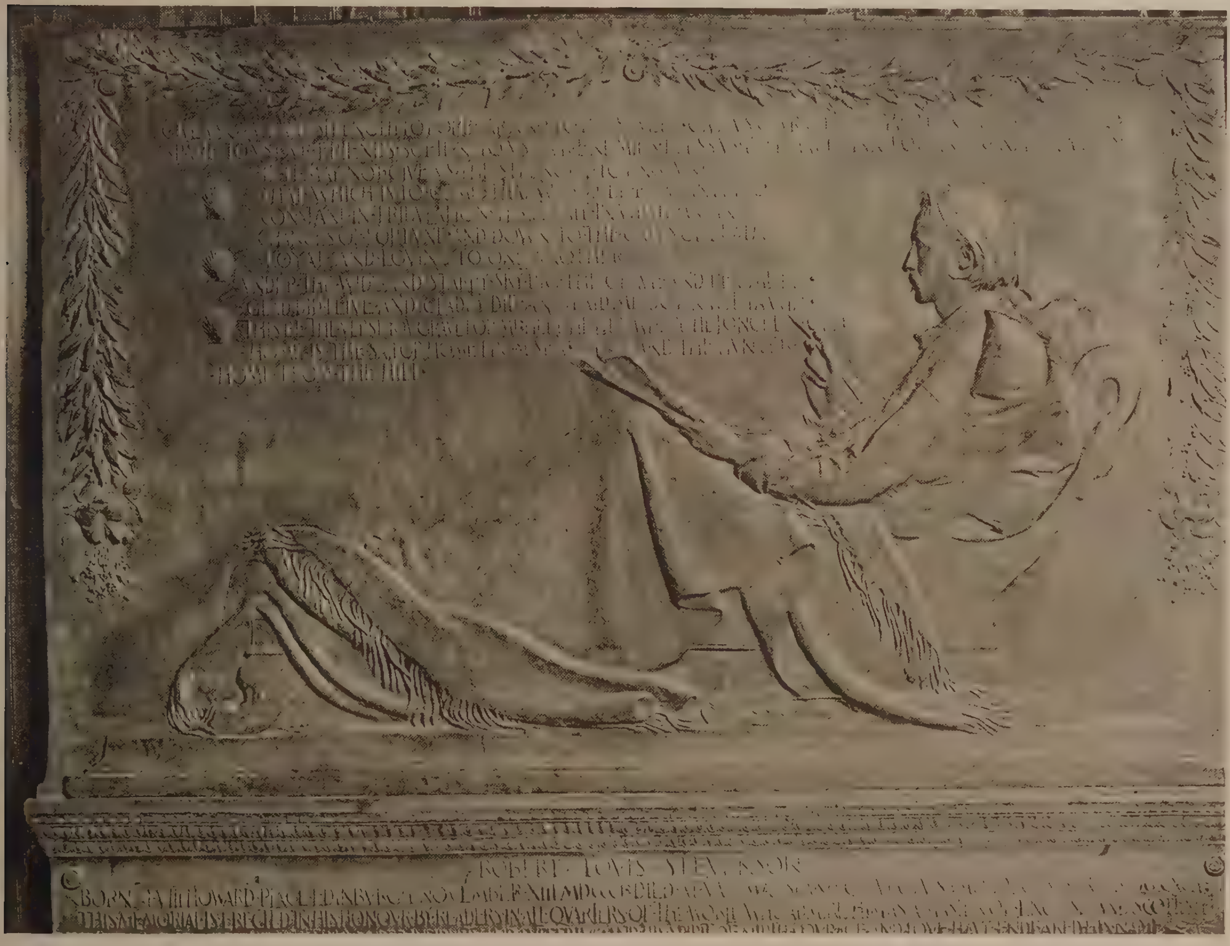
Full-size copy of the Sherman Victory, arranged so as to turn easily for study of various silhouettes.



Half-size model of Brooks monument, and the Farragut figure, a plaster copy, full size.

The Standing Lincoln dominates one end of the largest room.

The Adams memorial in Rock Creek; plaster cast, full size.



Bronze cast of the Stevenson, a copy of the relief for Saint Giles Church, Edinburgh.

life of service to our country. The fourth room is consecrated chiefly to the Adams monument, the master's consummate work. Lured by the desire to describe that which is in its mysterious essence beyond description, many writers have poured out many words before this shrouded figure. In vain! Most of us can gain from it only what we give to it, yet enhanced and illumined by the sculptor's vision.

The thoughts raised in our minds by this monument go with us as we tread the grassy path leading to the temple. Everybody, artist or otherwise, fell at once into the habit of calling this white memorial the temple. Its altar, sheltered beneath an entablature on four columns, guards the ashes of Augustus Saint-Gaudens, his brother Louis, and a beloved grandchild. The Vermont marble of the temple is not of that chilling whiteness once dear to our sculpture, but is of a warmer, more genial tone, often increased in beauty by the fleeting shadows of the surrounding pines and oaks. In design, the memorial follows the general lines of the altar built up in staff near this spot for the Masque of the Golden Bowl, performed by Cornish artists in honor of Saint-Gaudens. "As the play ended," he writes in his memoirs, "and the performers followed the chariot up to the house in their classic dresses, all bathed in a wonderful sunset, it was a spectacle and a recall of Greece of which I have dreamed, but have never thought to see in Nature."

The things I have touched upon here are only a part of all that Aspet has to give. In every nook and corner dwells some happy suggestion for sculptor or painter, architect or landscape-gardener. A few years ago, a great bustle was made in the world about the "correlation of the arts." At Aspet, there is correlation of the arts, but with tranquillity. Even the visitor least learned in the vast science of ensembles carries away with him a sense of unity. During the clement months of the New England year, thousands of pilgrims come to this shrine. In the phalanx of automobiles seen near the studio of the caryatids on pleasant afternoons, Fords do not predominate. This should not prejudice the fair-minded. Very rightly, in our large cities, the poorest citizens and their children may have the full benefit of our museums; no one can know from what humble sources the truest artist may spring. But, note well, it is our great unsung comfortable class that, through its children and its children's teachers, can best bring about among us a general advance in artistic culture. In speaking of such matters, Lord Bryce once reminded us that a living art comes to a nation not with the hurry and worry of material problems, not with the strain of keeping body and soul together, but with leisure and tranquil contemplation. The visitors at Aspet are largely persons who believe in inviting the soul. According to the visitors' book, they hail from far and near; from St. Petersburg, St. Paul, St. Louis, Los Angeles, South Bend, Pittsburgh, Pride's Crossing. And some of them, like our friend from California, rejoice aloud because from this memorial to our foremost American sculptor they carry away something of beauty for the service of mankind.

The Saint-Gaudens Memorial has been incorporated under the laws of New Hampshire to exist in perpetuity for the free benefit of the public. Mrs. Saint-Gaudens and her son have granted to the State the entire property—house, grounds, temple, studios, and their contents — the sole condition being that a fund of $200,000 be raised for maintenance in perpetuity. The trustees are now working to complete that fund. The memorial's future usefulness lies, therefore, in the generous hands of American lovers of art.

Roosevelt House

ROOSEVELT HOUSE has become not only a local but a national monument. Thanks to the Woman's Roosevelt Memorial Association, the old house has been reconstructed, under the experienced and skilful direction of Theodate Pope (Mrs. John W. Riddle), the architect, into a fitting and serviceable place for carrying on the Roosevelt tradition. The house stands in a side street given over to business, shut in by many large modern buildings, but it will preserve its identity, no matter what the future may develop in the adjacent real estate field.

The house has no striking architectural features. It is typical of the past, but in adapting it to its present purposes Mrs. Riddle has made the most of her opportunities. No doubt, the interiors will excite the most interest. In these every effort has been made to preserve and restore the conditions that prevailed at the time the Roosevelts lived there. The wall-paper and the furniture—much of the latter belonged to the family—give an impression of old-fashioned ideas of decoration that have a certain quaintness and picturesqueness.

The house was dedicated on the sixty-fifth anniversary of Colonel Roosevelt's birth with becoming and impressive ceremonies. It is divided into two distinct parts. That part of the house which is situated at No. 28 is, in its exterior and on its first and second floors, an exact replica of the house in which Theodore Roosevelt was born on October 27, 1858, and will contain much of the furnishings of the original house; the third floor is given to office space for the Woman's Association. At No. 26, the basement and first floor will be devoted to the exhibition of the Roosevelt memorabilia collected by the Roosevelt Memorial Association. The second floor contains the association's library, together

with rooms for students or writers using the association's collections. The Bureau of Research and Information will have its office, its safe-deposit vaults and its filing-room on the third floor, which will also contain a board-room for the joint use of the two associations. An auditorium, which will be under the exclusive control of the Woman's Association, will cover the fourth floor of both buildings.

The library is made up of material both by and about Colonel Roosevelt and the activities with which he was associated, and includes both gifts and purchases. Its material consists of books, pamphlets, magazine articles, manuscripts, original cartoons, printed cartoons, photographs, both original and printed, and newspaper clippings.

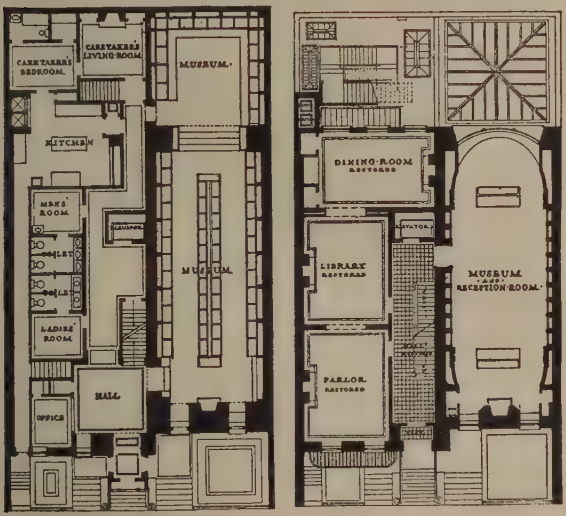
The most important single collection of Rooseveltiana, which will be turned over to the bureau as soon as the material can be adequately listed and catalogued, is the complete correspondence of Mr. Roosevelt with his friend and Cabinet member, Mr. Oscar S. Straus, and will be presented by Mr. Straus.

Mr. Julian Street has placed on indefinite deposit with the library of the association his personal collection of Roosevelt relics. This interesting mass of material consists of two unbound volumes of original letters, photographs, and souvenirs arranged in the form of a continuous narrative and connected by Mr. Street's own notes. There is also a copy of Mr. Bishop's "Theodore Roosevelt and His Time," extra illustrated by the insertion of original letters and photographs; a copy of Roosevelt's "Autobiography," containing the author's presentation inscription; and a copy of Mr. Street's "Most Interesting American," containing a full page inscription by Colonel Roosevelt to Mrs. Street.

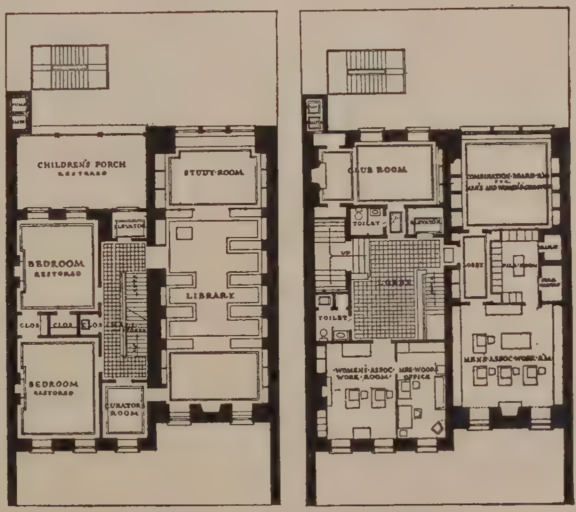
The museum collection is not large, yet it contains a number of striking items, all of them gifts.

The house will more nearly resemble what it was when Roosevelt was born there than it has at any other time for possibly fifty years. With endless patience and care the directors of the Woman's Association have followed every clue that promised to bring them either authentic information concerning the appearance of the original house or actual pieces of furniture which were in it. In one obscure place one of the old mantels has been located; in another, a bureau, a chair, a set of the original hangings. The old ceilings have been painstakingly copied in their queer, old-fashioned designs; the old, quaint wall-papers are being reproduced. An astounding amount of research has gone into the re-creation of this house.

© M. E. Hewitt



ROOSEVELT HOUSE—BASEMENT AND FIRST FLOOR

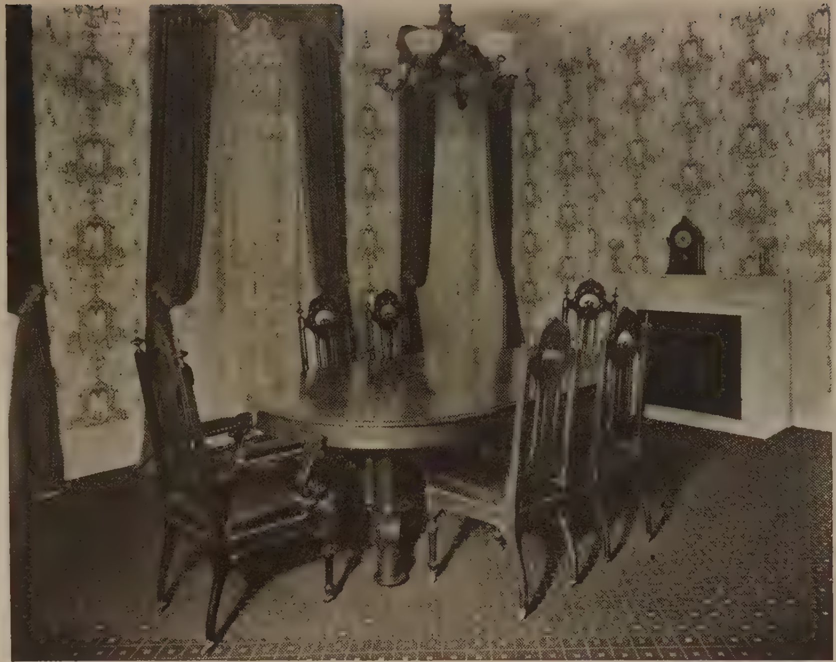


ROOSEVELT HOUSE—SECOND AND THIRD FLOORS

THE LIBRARY IN THE ROOSEVELT HOME. © M. E. Hewitt.

THE MEMORIAL LIBRARY. © M. E. Hewitt.

ROOSEVELT HOUSE, NEW YORK.
Theodate Pope, Architect.



DINING-ROOM. © M. E. Hewitt

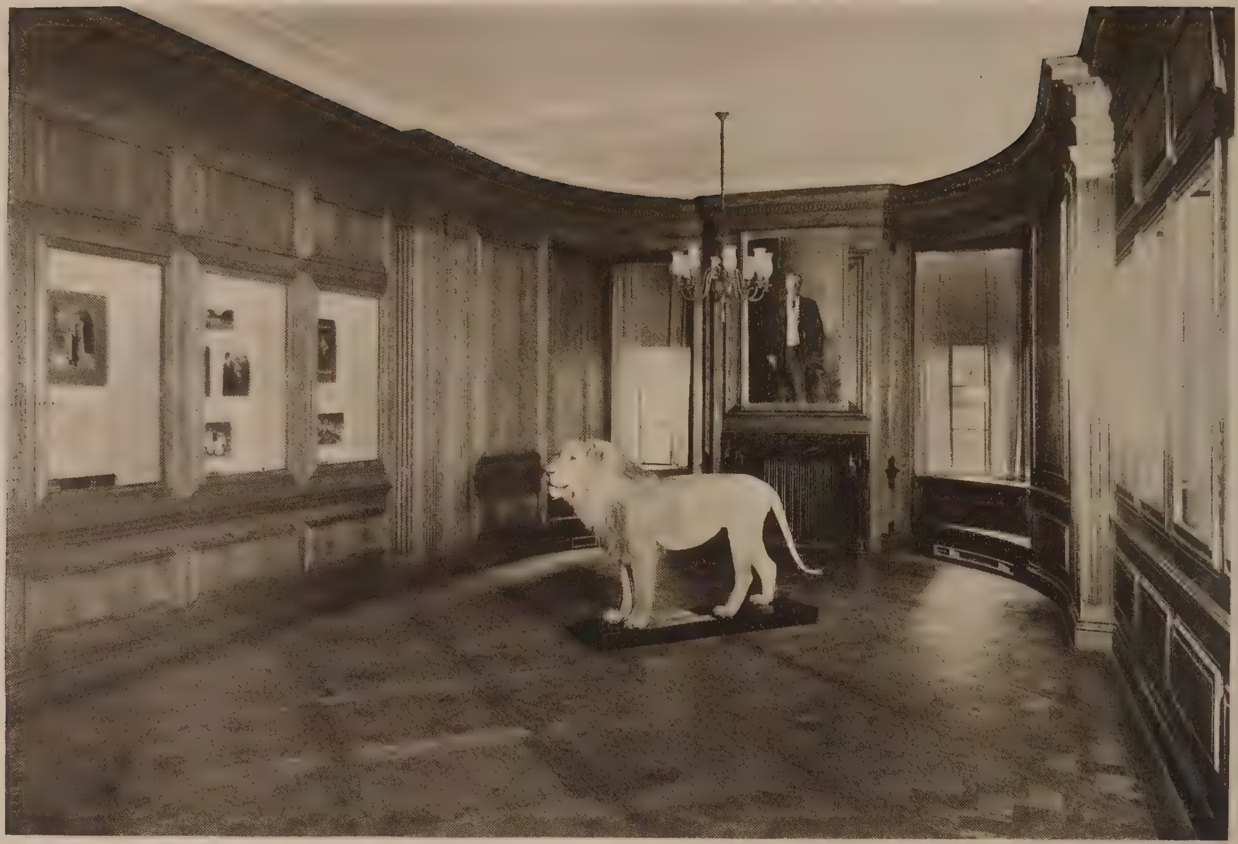
ROOM IN WHICH THEODORE ROOSEVELT WAS BORN. © M. E. Hewitt

PARLOR. © M. E. Hewitt

CHILDREN'S ROOM. © M. E. Hewitt

ROOSEVELT HOUSE, NEW YORK.

Theodate Pope, Architect.



MEMORIAL MUSEUM. © M. E. Hewitt.

AUDITORIUM. © M. E. Hewitt.

ROOSEVELT HOUSE, NEW YORK. Theodate Pope, Architect.

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* Reg. U. S. Pat. Office

Editorial and Other Comment

For Better Church Architecture

WE have been much interested in a recent number of "The American Lutheran," designated as "An Architectural Number," and it contains so much of interest and value to the profession that we are going to pass some of its contents along.

It is an encouraging and hopeful sign when one of the great church organizations shows that it is thoroughly awake to the need of better churches, and we hope the lesson will not be lost on others of the various sects who have apparently for a long time gone on the assumption that any kind of a building was good enough for worship. But how much of the authority and prestige of the church of the Middle Ages was due to the wonderful old world cathedrals that have made Gothic a symbol of power, aspiration, and beauty.

In the leading editorial of this magazine we learn that a board on church architecture has been created and that "extensive use of its services has already been made. The board will be able to render most valuable help in solving the problems of combining architectural beauty with the necessary economy in building operations which most congregations demand."

Among the contributors of special articles is Ralph Adams Cram, whose position in the advancement of our church architecture is too well known to need comment. He writes of "The Regeneration of Protestant Architecture." How bad much of it was for years even the man in the street knows, but according to Mr. Cram the last twenty-five years have seen great changes for the better.

"And now what? Well, the quarter-century has wrought a sea-change; adverse criticism is silenced all along the line and instead is amazement, admiration. The Episcopal Church has recovered its old ideals and is now far ahead of the Church of England in its standards and its product. Rome, though still holding to the evil old ways in the remoter parts of the country (the adjective applies both territorially and culturally), has within ten years come forward with some of the finest architecture to be found in America, with more following on, a recovery that almost brings back the splendor and the supremacy of the Middle Ages. Perhaps this was to be expected, at least hoped for, since both Rome and the Anglican Communion had the tradition hidden away within themselves; but what about Protestantism? Here, apart from the Lutherans, who, as I have said, were never personally averse to art, there was no tradition, unless it were one of hatred, destruction, and non-accomplishment, and, yet, Protestantism has recorded almost the greatest recovery of all. From one end of the country to the other, Presbyterians, Congregationalists, Unitarians, Swedenborgians are all rejecting the old standards and prejudices, upholding high ideals in religious art, and demanding (and obtaining) only the best that architects can produce. The same is true of the various branches of Lutheranism, but this was to be expected, as one hoped for the same in the case of Roman Catholicism and Anglicanism. The wonder is that the thing has occurred amongst the Calvinistic and Puritan derivatives. Yet while we wonder we bow in respect and admiration. Surely this is one of the great happenings of the time."

Where Do We Go From Here?

WE have followed with keen interest the various reports of measures to relieve the housing shortage for the poor and the man of modest salary in New York City and elsewhere, and when the Phelps Stokes Fund undertook to test the possibilities we felt assured that the result would give us some definite and convincing figures.

There was a belief in many quarters that the reason that cheaper apartments were not possible was the greed of the speculators who were not content with a fair return on their investment, but preferred to be included in the so-called profiteer class.

Now it seems that the results of the Phelps investigations have proved that it is impossible to build tenements that can be rented for nine dollars a room. That present conditions are a menace to public health and to the future of many who are compelled to live in overcrowded and narrow quarters is obvious enough, and the problem of remedial measures has become one of vital significance to every city in the country.

In New York it would seem as if the only possible solution was the building of large units outside of the city limits, where the value of land has not yet become prohibitive under the increasing congestion of population.

With the problem of building suitable homes, comes of course the problem of cheap and quick means of transportation.

New subways are urgently needed and a better centralization of the means of egress from the city by our steam and electric roads.

The results of the Phelps Stokes investigations show that the average four room apartment—the bathroom is included as a room in the Phelps Stokes figures—must rent for $41.04 a month.

The Fontainebleau School of Fine Arts

WE have received from Mr. Ernest Peixotto, the chairman of the American Committee Department of Painting of the school, his report of the activities of the first session. It is an encouraging and interesting document, and we hope the school will receive the increased attention it so well deserves.

A wing of the Palace—the Salle de la Belle Cheminée or Ancienne Comédie—has been completely renovated by

the French Government and transformed into vast ateliers for painters and architects.

The classes began in June with eighty-five students. Of these the Yale School of Fine Arts sent two scholarship students in architecture; the Maryland Institute, two in painting; the National Academy of Design showed its confidence by sending the winner of the Mooney Travelling Scholarship—a young man who afterward gained the 1923 Prix de Rome; and many of our leading art schools and colleges were represented in the student body.

It is the hope of those interested in the school that, as the number of its students cannot be increased, a higher standard for admission can be set, so that only those best fitted beforehand for the exceptional character of work will be admitted. This end can be greatly helped by the creation of scholarships of $500 each. These might be endowed by our leading art schools, colleges, architectural clubs, or ateliers.

In addition to the departments of architecture and painting it is hoped that a department of sculpture may be included next year.

The school offers not only exceptional opportunities for serious study but, as well, many cultural privileges in the way of visits to the studios of famous artists and the wonderfully interesting country about Paris.

The Thirty-ninth Annual Exhibition of the Architectural League

Last Day for Return of Entry Slips.—Saturday, December 29, 1923. To 215 West 57th Street. *Only Days for the Reception of Exhibits.*—Wednesday and Thursday, January 16 and 17, 1924, 9 A. M. to 5 P. M. *Press View.*—Friday, February 1, 10 A. M. to 4 P. M. *Opening Ceremonies.*—Friday, February 1, 9 P. M. *League Reception.*—Saturday, February 2, 3 to 6 P. M. *Public Exhibition.*—From Sunday, February 3 to Sunday, March 2, inclusive. *Hours.*—10 A. M. to 6 P. M.; 8 P. M. to 10.30 P. M.; Sundays, 1 P. M. to 6 P. M.

The committee particularly directs the attention of architects to the following statement which it makes in the hope that a clear understanding of its policy may inure to the benefit of exhibitors and to the success of the exhibition.

The effect of the exhibition as a whole is of the highest importance. The general impression made upon the visitor is stronger than that made by individual exhibits. To produce this impression it is obvious that the walls of the galleries should present an orderly and harmonious appearance. Exhibits containing large areas of white paper or having white or light-colored mounts conduce to a spotty and disorderly general effect. Exhibitors are therefore advised that such exhibits are likely to be hung poorly or not at all; and in case such are submitted, the committee reserves the right to remount, or modify the tone of the mounts of, any such accepted exhibits at the exhibitor's expense.

Exhibitors are therefore urged to give thought and care not only to the selection of subject, but to its tone, framing, and mounting. This is especially important in groups of separate units particularly when composed of views of the same subject. Such groups should naturally be maintained, but frequently the tones, shapes, and sizes as submitted are so unmanageable that either the group must be broken up or some part of it be omitted.

The committee particularly requests the submission of the work of landscape architects.

Remember that this exhibition should interest the public and that the public is strongly affected by presentation.

It is the observation of the exhibition committee that a number of members are regularly delinquent each year in delivering their exhibits to the league at the time stated in the circular of information. This complicates the work of the exhibition committee whose service is given voluntarily, as well as increasing the paid labor expense incidental to hanging. The executive committee, therefore, calls attention to its ruling that hereafter all exhibits received subsequent to the appointed day will be rejected irrespective of the fact of their acceptance for the catalogue unless same shall have been solicited.

MEDALS OF HONOR

The league established in 1909 a medal in painting, in 1909 a medal in sculpture, in 1915 a medal in architecture, in 1919 a medal in landscape architecture, and in 1920 a medal in design and craftsmanship in native industrial art production, and offers these medals annually. They are intended to encourage the submission of works of merit, to raise thereby the standard of the league's exhibition and shall therefore be given only in recognition of superiority in work actually submitted and placed. Recipients of these medals and of that formerly presented by the New York Chapter of the American Institute of Architects are *hors concours*.

In Architecture, Decorative Painting, Sculpture, and Landscape Architecture

Works in architecture and landscape architecture to be eligible for an award must be adequately presented by means of drawings, photographs, or models of executed work. The jury may request the submission of such additional data on the same work as may assist them in making the award.

Works in decorative painting and sculpture to be eligible for an award must be actual paintings and actual sculpture and not consist merely of photographic representations.

The juries may invite the submission of such works in the four arts as they may desire to consider for an award.

If, in the opinion of the jury, the work submitted in either architecture, painting, sculpture, or landscape architecture is not of sufficient merit to justify an award, no award shall be made.

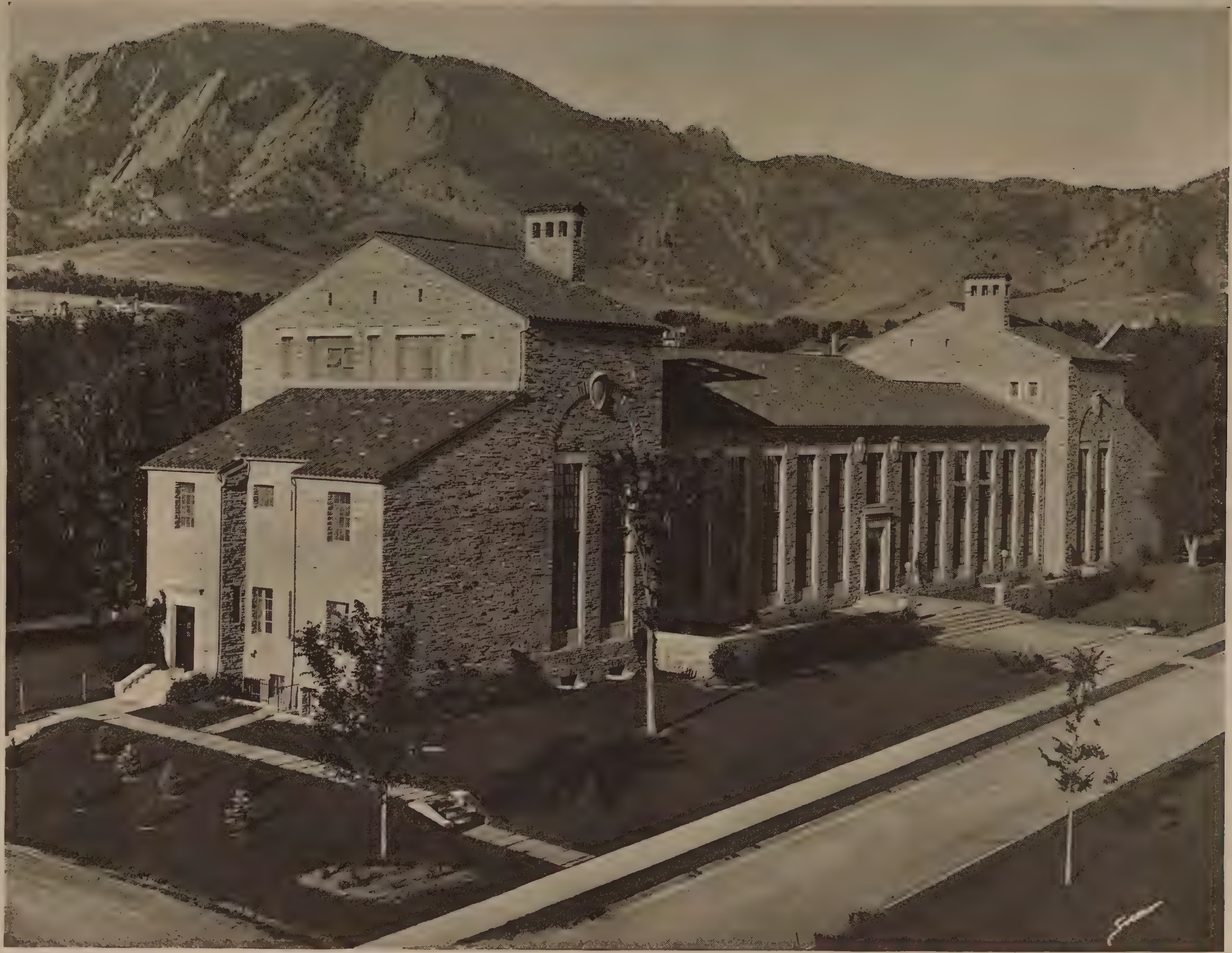
The jury of award shall be thirteen in number, of which the president of the league shall be ex-officio chairman. The executive committee shall appoint three architects, three painters, three sculptors, and three landscape architects from nominations made by the New York chapter of the American Institute of Architects, the Society of Mural Painters, the National Sculpture Society, and the American Society of Landscape Architects, respectively. These appointments to be made in the month of November preceding the exhibition. All members of the jury of award shall be *hors concours* for the awards made by such jury.

A medal shall be accompanied by a certificate setting forth the name of the completed work which formed the basis of the award, together with the considerations which, in the opinion of the jury, characterizes the work as worthy of this distinction.

In Design and Craftsmanship in Native Industrial Art

Works in native industrial art to be eligible for an award may be in any of the crafts. Such works shall be actual objects and of recent production, but may be accompanied by photographs of the exhibitor's previous work in the same craft.

The jury of award for the medal in design and craftsmanship in native industrial art shall be appointed by the president and executive committee of the league from among individuals qualified as authorities in the several departments of industrial art.



LIBERAL ARTS BUILDING, COLORADO UNIVERSITY, BOULDER, COLO.

Day & Klauder, Architects.

LIBERAL ARTS BUILDING, COLORADO UNIVERSITY, BOULDER, COLO.

Day & Klauder, Architects.

CORRIDOR.

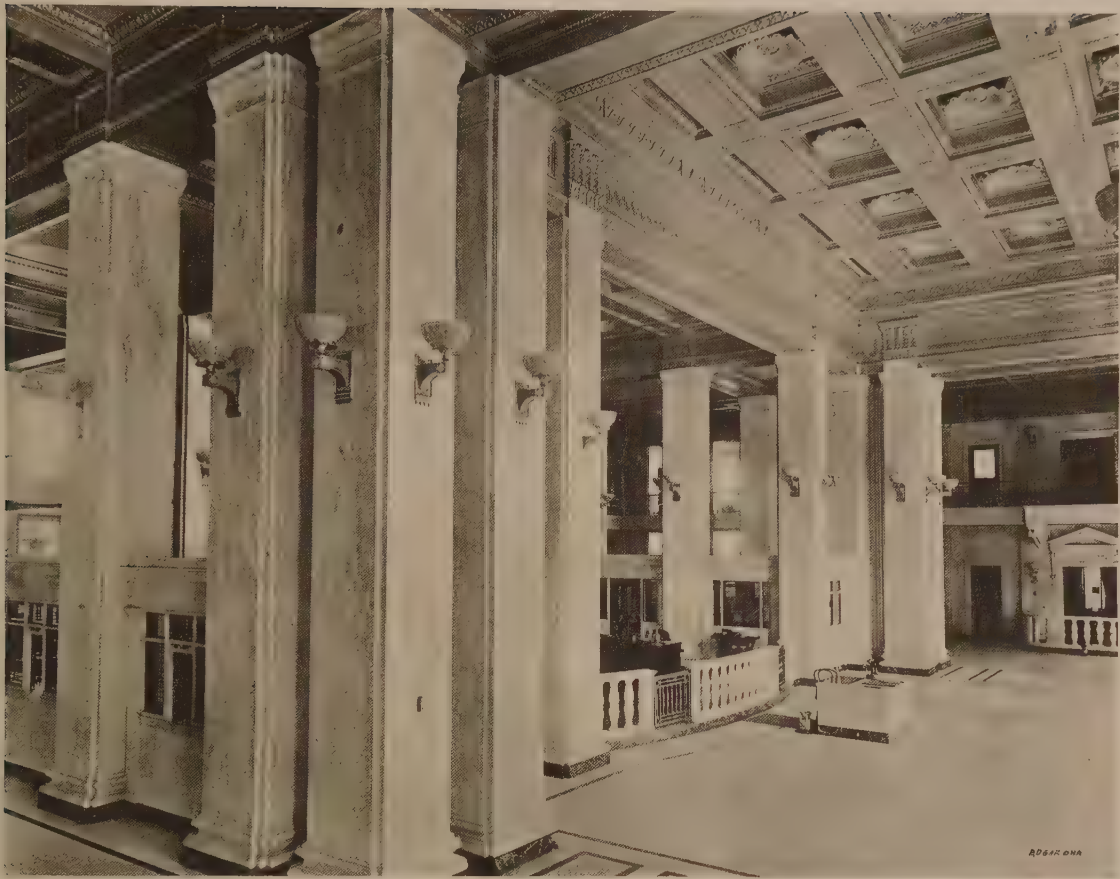
STAIRWAY.

Day & Klauder, Architects.

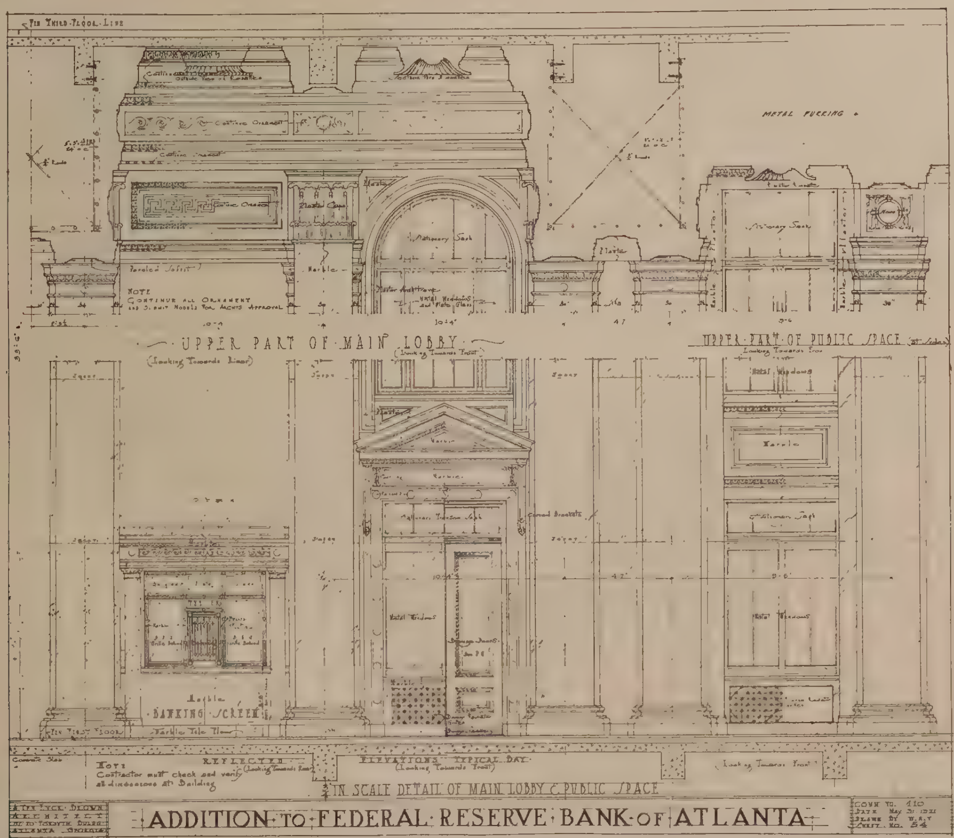
LIBERAL ARTS BUILDING, COLORADO UNIVERSITY, BOULDER, COLO.

FEDERAL RESERVE BANK OF ATLANTA, ATLANTA, GA.

A. Ten Eyck Brown, Architect.

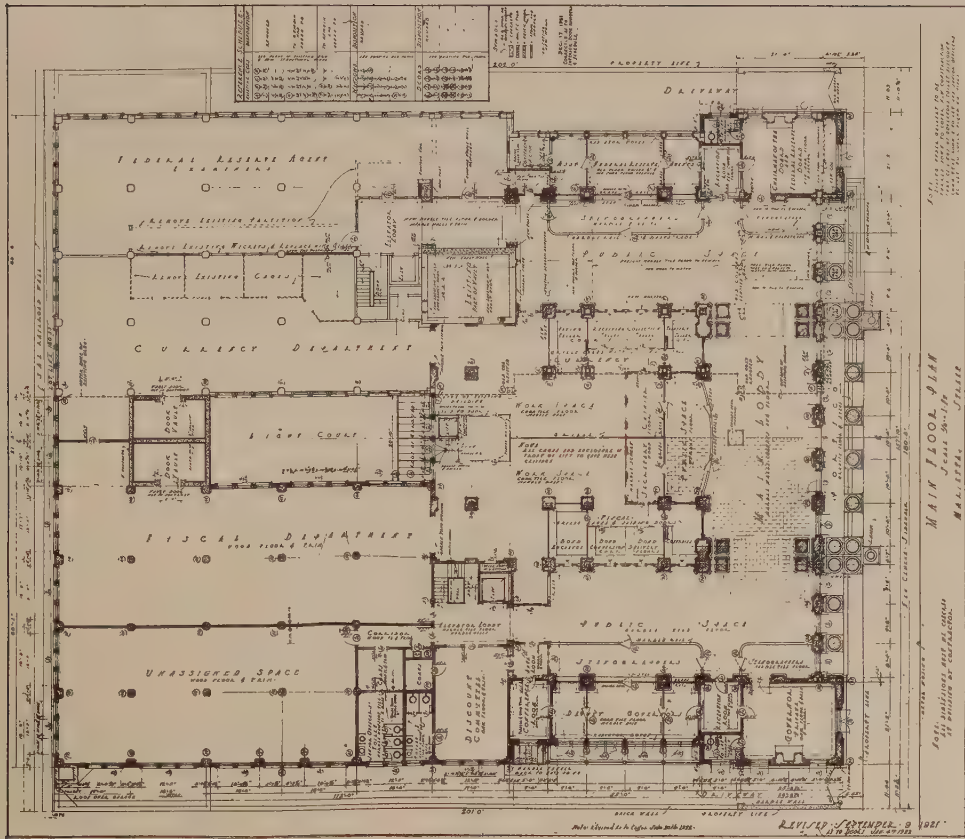


PUBLIC SPACE.

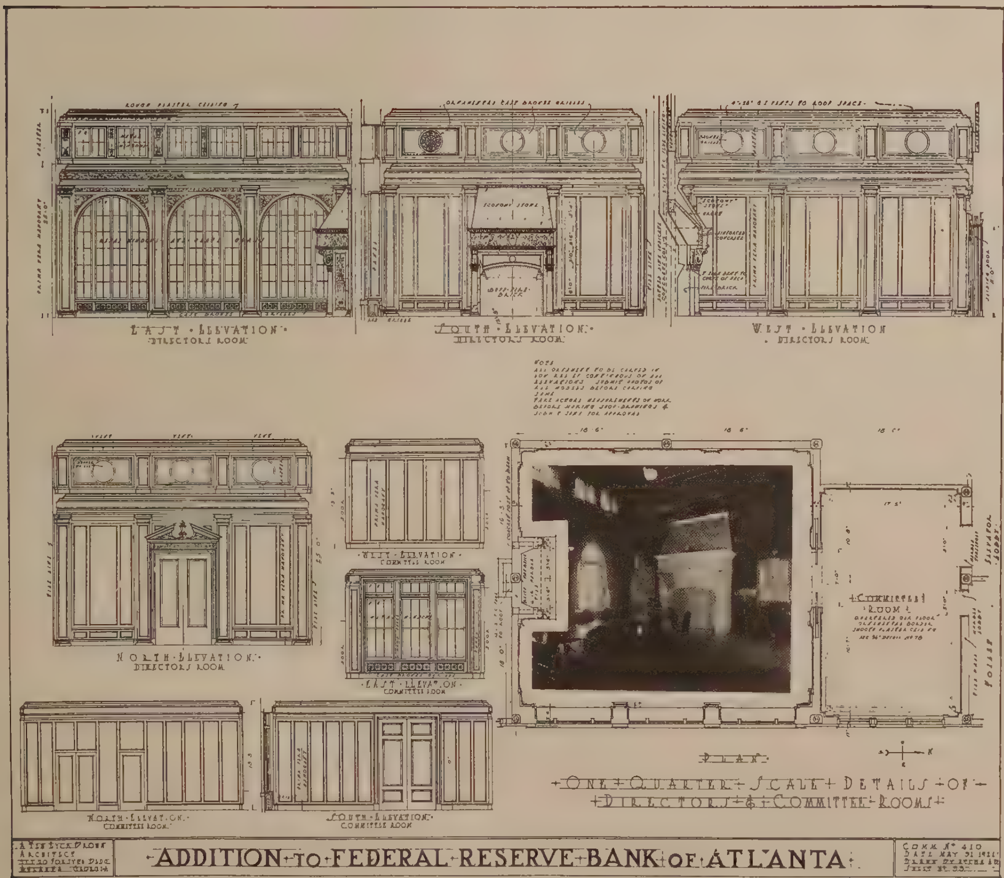


FEDERAL RESERVE BANK OF ATLANTA, ATLANTA, GA.

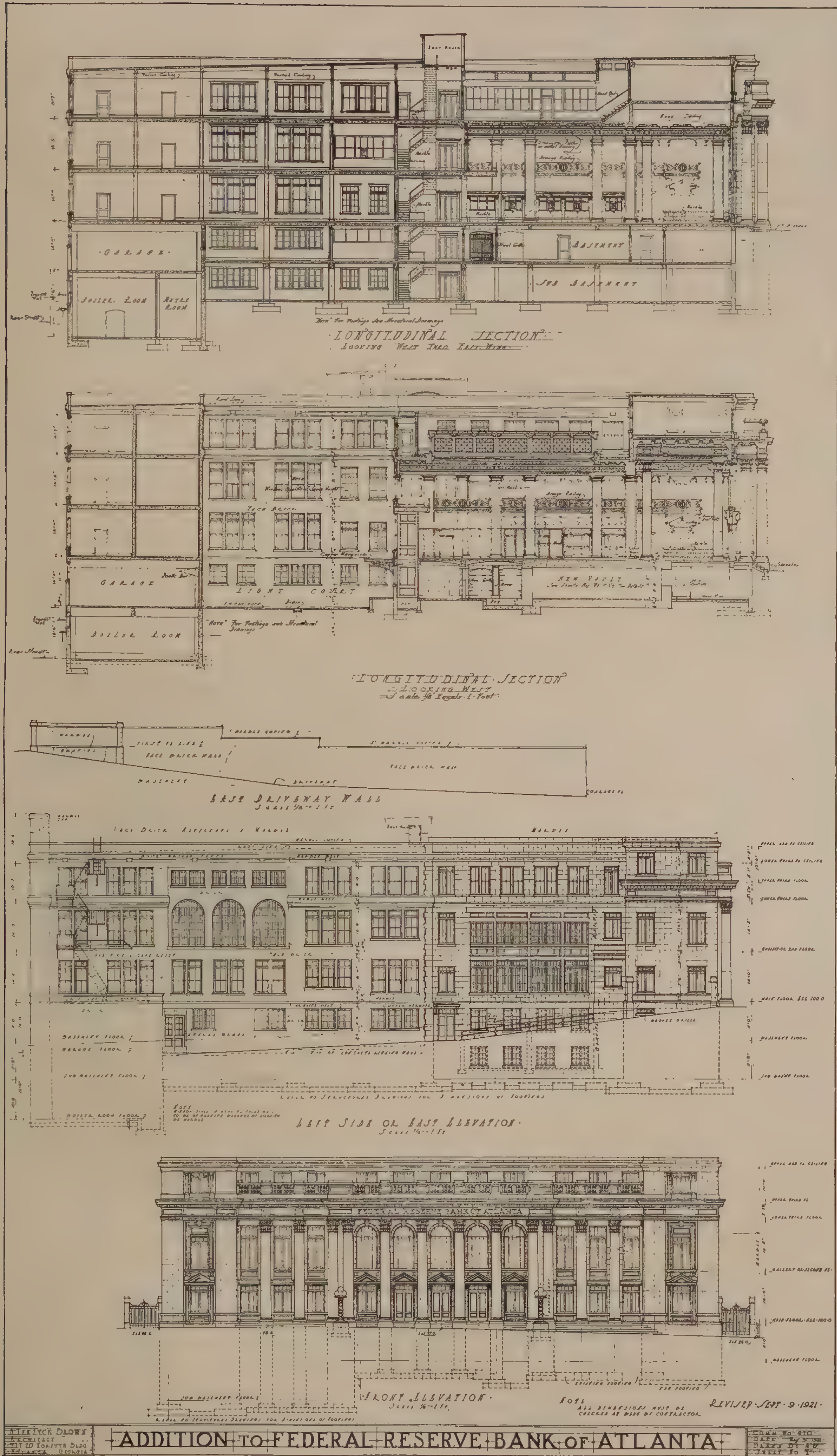
A. Ten Eyck Brown, Architect.



MAIN FLOOR PLAN.



FEDERAL RESERVE BANK OF ATLANTA, ATLANTA, GA. A. Ten Eyck Brown, Architect.

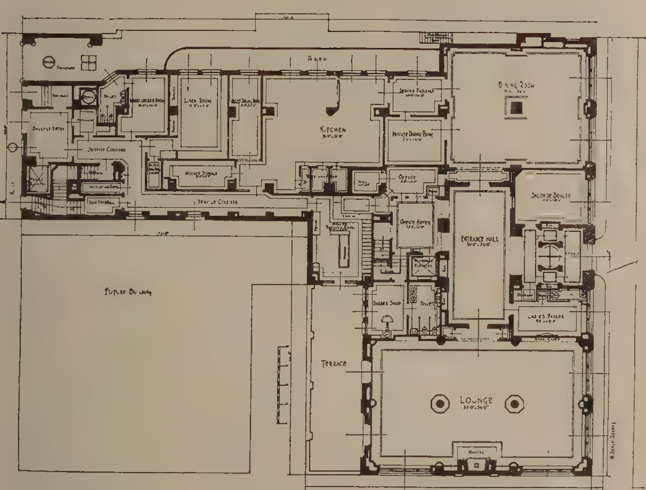


FEDERAL RESERVE BANK OF ATLANTA, ATLANTA, GA. A. Ten Eyck Brown, Architect.

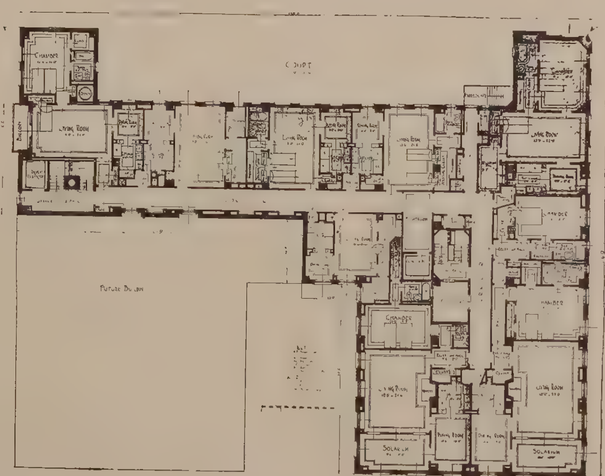
CHURCHILL APARTMENT HOTEL, CHICAGO, ILL.

H. L. Stevens & Co., Architects.

CORNER OF LOUNGE.



FIRST FLOOR PLAN



TYPICAL FLOOR PLAN

CHURCHILL APARTMENT HOTEL, CHICAGO, ILL.

H. L. Stevens & Co., Architects.

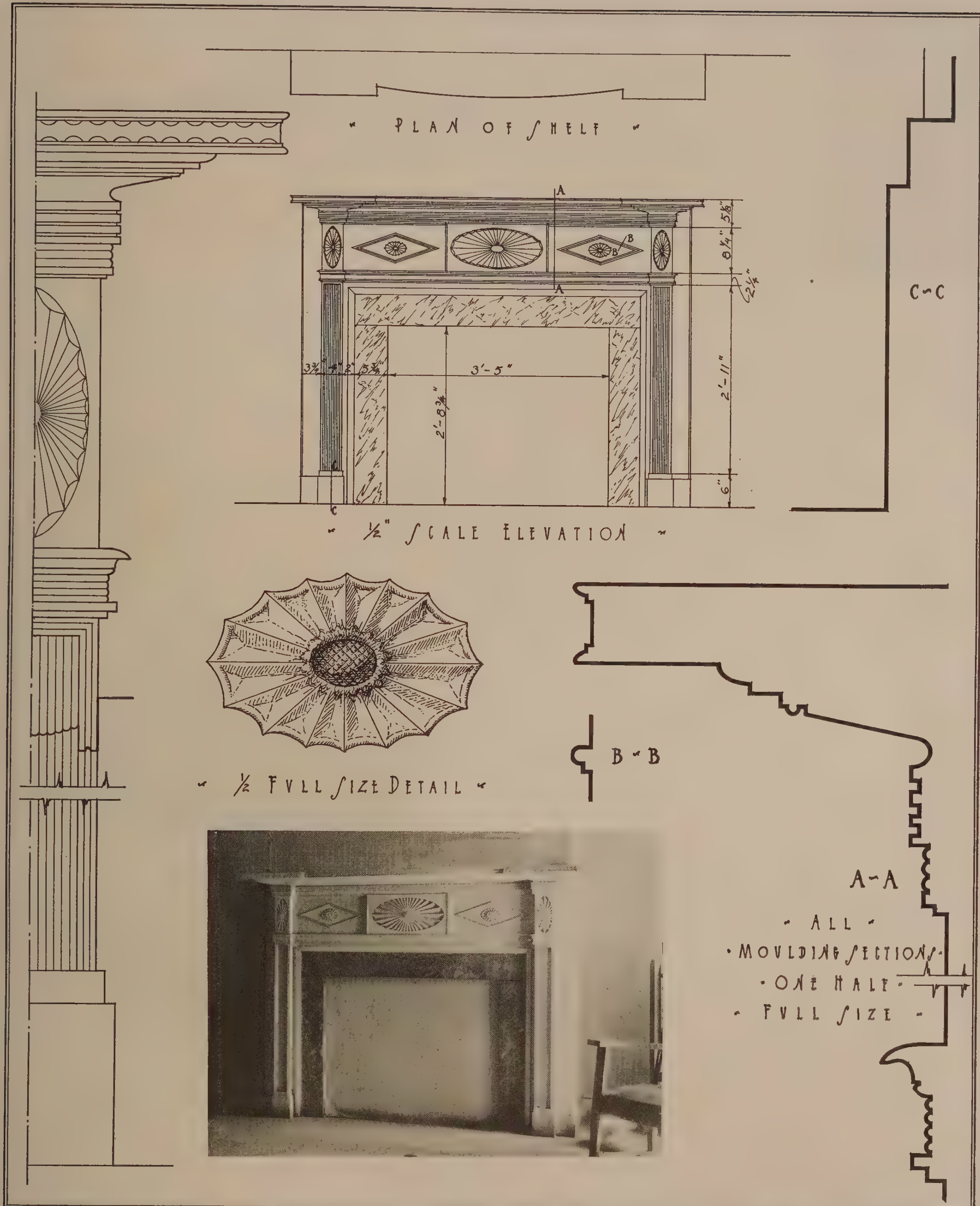

MAIN ENTRANCE HALL.


TYPICAL LIVING-ROOM IN ITALIAN SUITES.


COLONIAL LIVING-ROOM.


LIVING-ROOM DETAIL.

CHURCHILL APARTMENT HOTEL, CHICAGO, ILL.
H. L. Stevens & Co., Architects.



EARLY ARCHITECTURE OF CONNECTICUT	A MANTEL IN AN OLD HOUSE # 980 CHAPEL ST. — NEW HAVEN, CONN.	MEASURED BY J. FREDERICK KELLY DRAWN BY HENRY S. KELLY


wood rosette
wood fanlight
A
B
C
D
E
F
G
H
11 3/4"
1 3/4"
1'-10 1/2"
5 1/4"
1'-4 1/2"
4"
8'-8 1/2"
7'-0"
6 1/2"
10 1/4"
7 1/4"
8'-7 1/4"
10"
2 3/4"
7"
2 3/4"
5 1/4"
3'-6"
J.A. Altschuler
DATE- ABOUT- 1780
ELEVATION
Scale-inches 1 3 6
DETAIL of MOULDINGS
Scale-inches 1 2 3 4 5 6
SECTION
1 3 6
EARLY COLONIAL ARCHITECTURE of the CAROLINAS.
DOORWAY of the TAYLOR HOUSE
53 CRAVEN ST. NEW BERN, NORTH CAROLINA
MEASURED and DRAWN by J.A. ALTSCHULER

RYE NATIONAL BANK, RYE, N. Y. Dennison & Hirons, Architects.

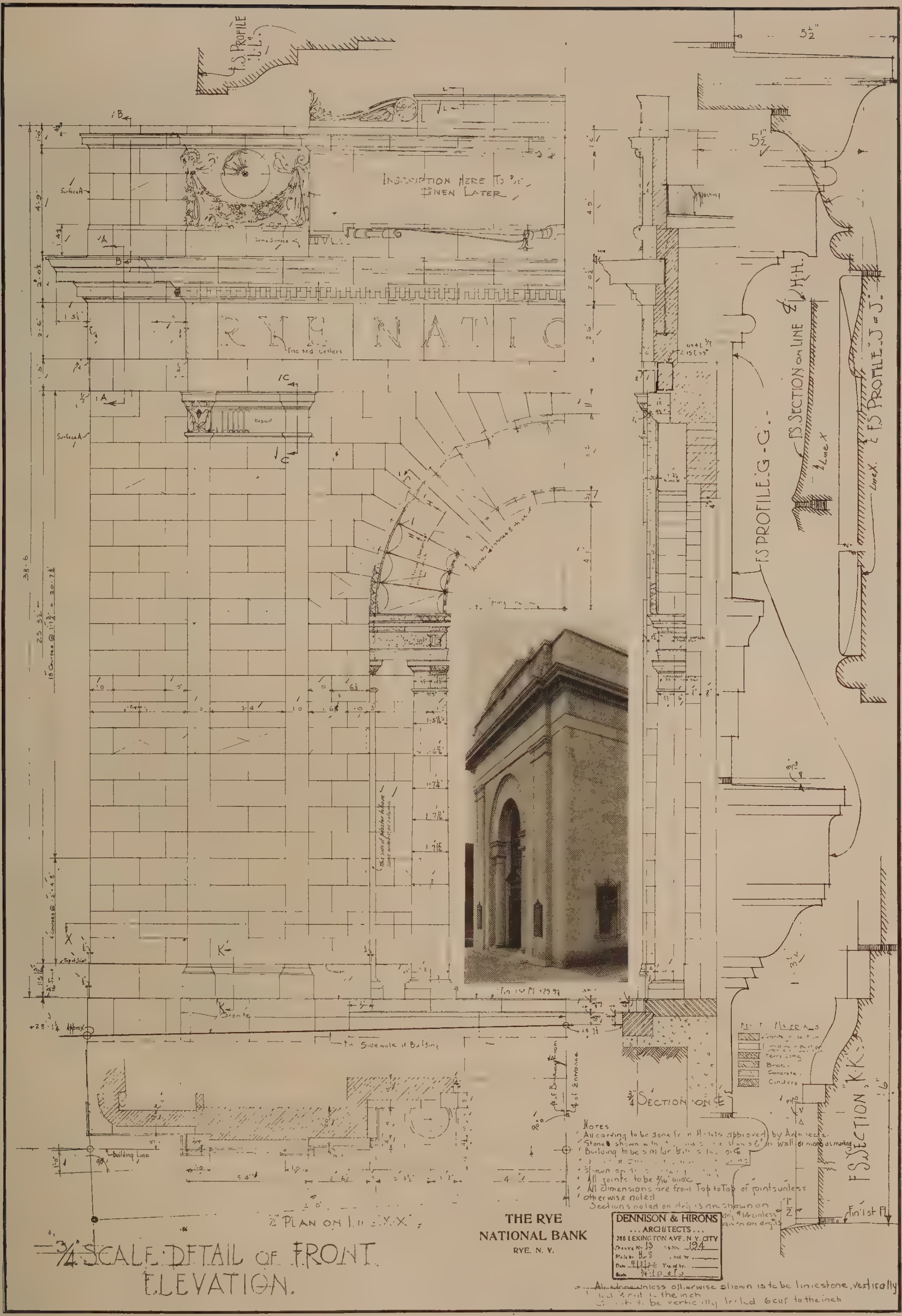
ENTRANCE DETAIL, RYE NATIONAL BANK, RYE, N. Y. Dennison & Hirons, Architects.

BANKING–ROOM, LOOKING TOWARD VAULT.

BANKING–ROOM, LOOKING TOWARD ENTRANCE.

RYE NATIONAL BANK, RYE, N. Y.

Dennison & Hirons, Architects.



SCALE DETAIL, RYE NATIONAL BANK, RYE, N. Y. Dennison & Hirons, Architects.

Rye National Bank

Dennison & Hirons, Architects

Directors' room.

In recent years we have seen a growth of banking institutions in our small towns and cities which is most creditable. The modern small town or city bank is to-day equipped with practically all the labor-saving and protection devices of the metropolitan bank. By these innovations these smaller banks have opened up possibilities which are daily growing greater for coming in closer touch with the population, and in this way they become instruments of greater service to the community.

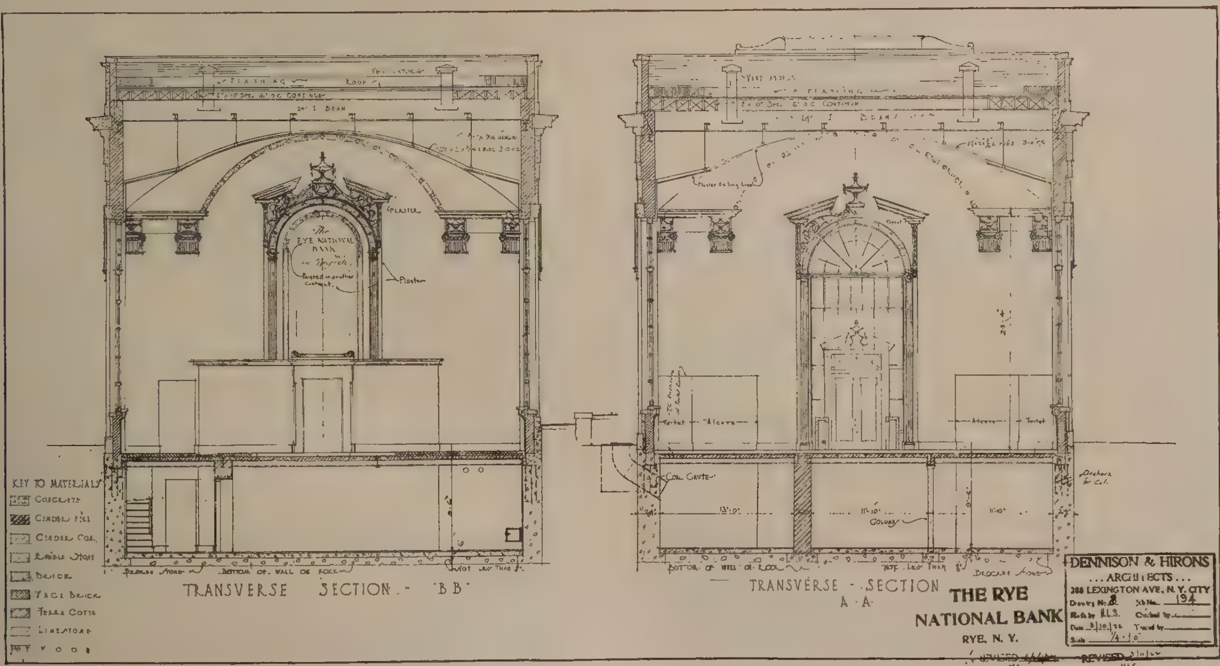
The Rye National Bank was established in 1900. Its success as a financial institution is clearly indicated by the erection of a new building in which it has its quarters to-day. The new building is centrally located in the business district of Rye. Yet the building is situated on a plot of ground large enough to warrant the architects giving it a monumental treatment on all sides. All four façades are executed in stone. The plot of ground, affording free space on three sides of the building, gives also the opportunity for judicious planting about the building. The bank, therefore, has the advantage of a setting not frequently to be found.

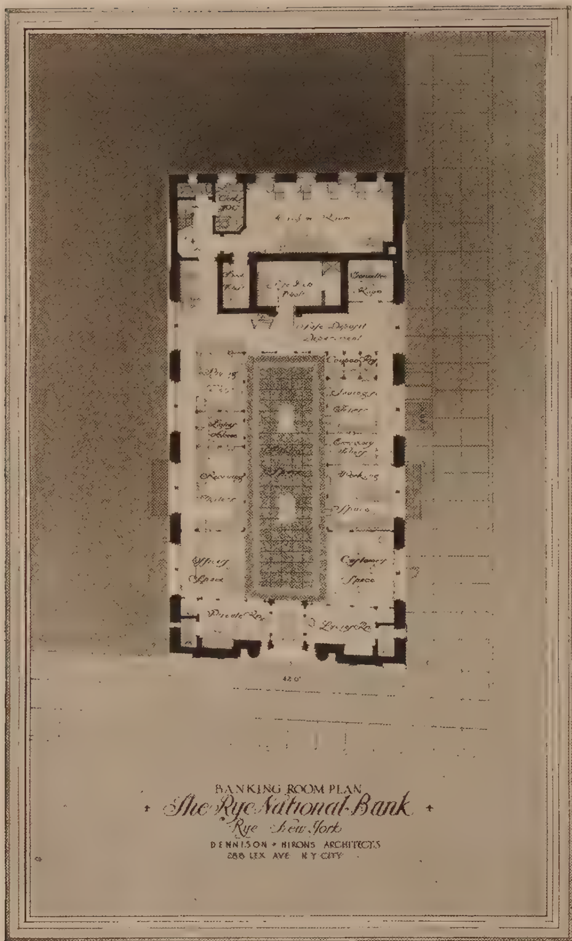
The exterior design of the building follows the best tradition of the Georgian architecture, such as is seen in the work at Bath, England. The architects have striven primarily for dignity of design and they have attained this by careful study of the proportions of the building. The ornamentation, while interesting, is refined in character and sparsely used. The entrance arch motif gives excellent relief to the simplicity of the main façade. The entrance doorway is of cast iron with delicate decoration. The high arched window over the entrance gives the passer-by an unobstructed glimpse of the ample banking-room within, and the good psychological effect thus produced is of great advantage to the bank. From the advertising point, the sight of a well-designed room, suggestive of light and air and comfort, is appealing. It may be unjust, but we associate open space with open people. A well-lighted, well-arranged, cheerful banking-room is an undeniable asset. In considering the façades of the building, it will be observed from the illustrations that the mouldings have been given great attention, as have other details of the work, notably the metal signs on the main façade.

The arrangement of the interior of the bank building will be readily understood by referring to the reproduction of the plan given herewith. It will be noted that the banking-room is arranged with a central public space surrounded on three sides by working space. At the rear of the banking-room is the security vault. To the right and left of the entrance are the officers' and customers' spaces. This arrangement of plan has been found to be extremely practical, and it is undeniable that it affords the architects an excellent opportunity for an adequate expression of their art.

The interior of the banking-room is treated in the Georgian style; the walls are of plaster, painted a delicate warm gray color, the ceiling being somewhat lighter in tone. The vaulted treatment of the ceiling with its penetrations over the side windows adds greatly to the sense of spaciousness which the room gives.

Architectural ornament is used sparingly, with the result that it has a fine distinction. The banking screen is of walnut and wrought iron. Its detail is simple, yet effective, and the warm color of the woodwork adds much to the inviting quality of the room. At the rear of the banking-





room is a wrought iron grille gate. This grille gives a sense of additional protection to the security vault which lies behind. Of course, the grille is necessary to prevent the public from approaching the vault, but after an examination of the vault, one would be tempted to think that it needs no protection other than that which it has been endowed with. Built of reinforced concrete, the vault is equipped with steel lining, designed to withstand fire, burglars, water, and other dangers. In addition, the vault is wired for electric protection—this protection, if tampered with, making itself loudly audible by the burglar alarm located on the exterior of the building. The door of the vault is of the first quality and is a fine example of the art of the safe maker.

Model for exterior ornament.

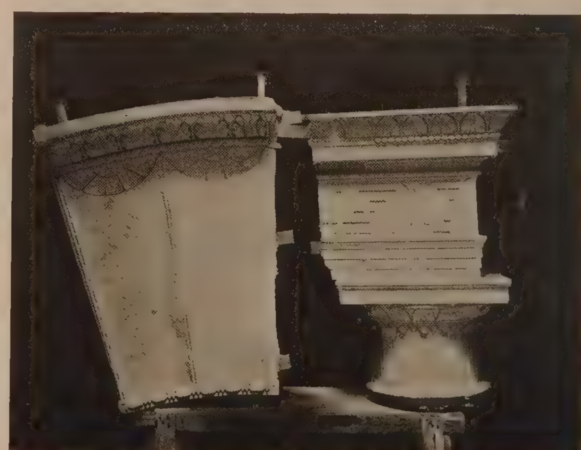
The security vault, it may be noted, contains 366 safe-deposit boxes, with additional capacity for three times that number. Not only is the security vault secured against attack by the system of electric protection but this is extended to the working space of the bank by a system of daylight hold-up stations at the various wickets of the banking-room screen.

The banking-room screen is equipped with upward and downward indirect lighting, giving an abundance of light when needed. During the period of daylight, the high arched side windows afford excellent light, which is tempered by the ecru-colored draperies. The color of these hangings harmonizes excellently with the gray tones of the walls and the gray-green color of the terrazzo flooring.

In the basement of the bank are located the silver storage vault and the rooms for trunk storage, as well as locker-rooms, boiler-room, and accessories. The trunk-storage room occupies an area of 300 square feet.

At the end of the banking-room, it should be noted, is a large map forming a mural decoration in color. This map shows the country about Rye which is particularly served by the bank. The colors used in this map decoration are soft blues, grays, and greens, which accord well with the color-scheme of the room. In making use of this type of mural decoration and in realizing the possibilities offered by a geographical map, the architects and the bank have succeeded not only in giving an excellent treatment to the walls but in keeping alive a certain sentiment for the neighborhood. In placing this map upon its walls, the bank has preserved for the town a public record which will some day be historic.

Model for exterior ornament.



Model for exterior ornament.

Atlee B. Ayres and Robert M. Ayres, Architects.

RESIDENCE FOR ATLEE B. AYRES, SAN ANTONIO, TEXAS.

INTERIORS RESIDENCE FOR ATLEE B. AYRES, SAN ANTONIO, TEXAS.

Atlee B. Ayres and Robert M. Ayres, Architects.

Edmonton Public Library, Alberta, Canada. Macdonald & Magoon, Architects.

Edmonton Public Library, Alberta

Macdonald & Magoon, Architects

THIS building is designed as the central distribution point for the library system of the city, so that in addition to furnishing a self-contained circulating and reference library, it also embodies branch-library administration and duplicate-volume storage, together with repair, cataloguing, shipping, and receiving facilities so arranged as to work in harmony with the internal traffic and administration.

A thorough investigation of Canadian and northern United States libraries produced one outstanding requirement emphasized by all library administrators: maximum elasticity to take care of ever-increasing book accumulation.

Both the Library Board and the architects agreed on this point at the outset, and the result is a large open main floor, after the "Sommerville" type, in which departments are divided only by book-cases and barriers, so that rearrangement and continued expansion through reducing aisles, double-decking, etc., can be most effectively carried out.

The ground floor and basement workrooms, being subject to more noise, are partitioned off.

The number of exterior steps to the entrance has been reduced to a minimum for the safety of winter traffic.

The double-decked main storage and duplicate-volume book-stack in the centre of the ground floor forms the key to the building; all departments have ready access to it by stairs, book-hoist, electric elevator, and fireproof doors to adjoining departments. This stack is well lighted and ventilated.

The centre of the main floor is the loan-desk, which adjoins and has complete supervision over the three main entrances and connects with both decks of the storage-stack below by a book-lift. On this floor are arranged the open-stack circulating, reference, newspaper, magazine, and book-reading, while in the southeast corner, with a magnificent view of the Saskatchewan River valley, are the librarian, assistant librarians, and subsidiary waiting and steno-

graphic offices, vault, etc. The south windows of the magazine reading department are carried down close to the floor to take advantage of the splendid outlook.

The ground floor contains the staff rooms and conveniences, the cataloguing department, a small lecture room, and the juvenile department.

The basement contains boiler and fuel room, machinery room, shipping and receiving room, bindery, and a large stack room for magazine and newspaper storage files.

The electric elevator is located so as to connect departments vitally affected by movement of books, namely main floor, both decks of the storage-stack, cataloguing department, bindery, magazine storage, shipping room, etc., and is of the electric traction type, with push-button control and hinged steel drop-shelves.

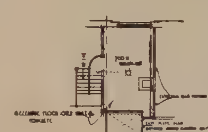
The interior is finished in white oak with the cement floors in the main floor and children's department covered with battleship linoleum. Other floors are terrazzo, tile, and "masterbuilt." Walls of main floor are decorated in warm gray, ornament touched with gold. Entrance is finished in Caen stone, marble, and terrazzo.

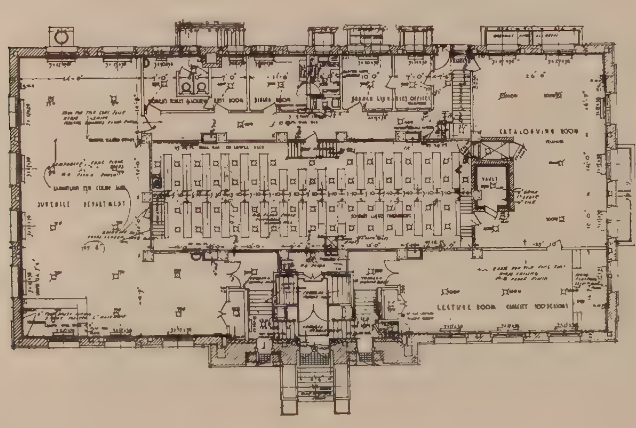
Mechanical equipment consists of vacuum cleaner, forced hot water heating, electric elevators, call bells, alarms, fire-hose, city telephone, pay station, and intercommunicating telephones, electric kitchen range, and complete plumbing equipment, lockers, gravity ventilation throughout with controlling dampers, electric lighting, etc. The main floor lighting is controlled from a large switchboard located on the back of book-hoist in the loan-desk.

The exterior is finished in Indiana limestone and specially selected Kittaning brick, the general effect being a creamy gun-metal with red-tile roof, copper gutters, deck-roll, skylights, flashing, etc. Ornament was modelled in clay to half-size by the designing architect.

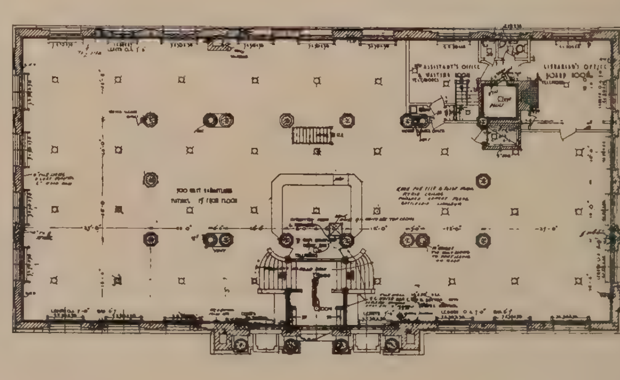
The construction in general is reinforced concrete with structural-steel roof trusses, metal-lath ceilings, clay-tile backing to walls and partitions.

The building is planned to house 60,000 volumes in the stack, 5,000 in children's department, 35,000 in main floor circulating and reference departments, with considerable future expansion available and additional new magazine storage.





Basement floor.



Main floor.

Construction of the Apartment-House

By H. Vandervoort Walsh

Instructor of Construction, School of Architecture, Columbia University, New York

ARTICLE XII

Partitions in Fire-Proof Apartments

IN apartment-houses of ordinary construction the partitions separating one room from another are framed with wooden studs and lathed and plastered on both sides. The trim around door openings and the doors themselves, in these partitions, are of wood. No claim is made that such construction is fire-resisting, for it is too well known that it is not.

On the other hand, we find in fire-proof apartments types of partition which are decidedly a compromise. These are constructed of hollow-tile blocks made of gypsum or terra-cotta, usually, or they may be built of wire lath and plaster; but the openings are protected only by doors and door-frames of wood. It is generally believed that such partitions are fire-proof. A more careful consideration of the construction, however, will make it evident that they are not.

Fundamentally the only excuse for using a fire-resisting partition around a room is to confine any fire that might develop to the place where it started. To believe that partitions constructed in the way described will do this is erroneous, for the fire will pass through the door openings with the greatest ease. Although the partition itself may retard the spread of the fire for a while, because it is non-combustible, if the fire can burn its way through the door openings, built of wood, there is but little safety guaranteed by such construction. Practically the only excuse for the use of partitions of this type is that they reduce the quantity of inflammable material, compared to that which would be in a wooden-stud partition, and partially retard the spread of the flames. Certainly, to be consistent, wooden doors and frames ought not to be used in partitions of this type, for they are no more logical than a concrete dam, built with a hole in it, and this opening plugged with sand. There are, nevertheless, many fire-proof apartments being erected to-day with wooden doors and trim in all partitions, because they are cheaper and are permitted by the building code. But even in these buildings such questionable economy is not practised on doors which open into stair halls, for these are either made of sheet steel covering a wooden core or sheet steel braced to form a hollow door.

The use of the hollow steel doors for all interior partitions offers many advantages of economy, too, which are sometimes not considered. Considering the usual type of wooden door and frame, there are more things to be done with it than with the metal door. For example, a 3-inch by 4-inch buck must be set up at each side of the opening, and a similar-size lintel carried across the top, having its ends resting on notches cut in the bucks. The partition blocks are built up to these bucks and carried over the opening on the wooden lintel. The door-frame must then be fitted inside of the bucks and properly blocked where the hinges come. Then the trim on both sides of the opening must be nailed in place, and the door hung to the frame on butts.

If hollow metal doors are used, the metal frames may be set up at the openings when the partitions are being erected. These frames form the trim on both sides, the jamb, and the lintel. The blocks are built up to them and over the opening. Bricks are omitted, and the extra work of setting door-frames and trim eliminated. This economy of labor offsets much of the added expense of the all-metal door and trim. There is, it is true, some danger of the mouldings on these door-frames being dented while they are in place during the period when rough work is in progress.

As long, though, as wooden window-frames, sash, and trim are used, the wood interior doors will probably be ordered along with them for fire-proof apartments. Metal windows are so generally more expensive than wood that they are not apt to be used except when the law requires them in stair-wells.

Be that as it may, this whole matter of fire-proof partitions is generally misunderstood. In very severe fires partitions built of hollow terra-cotta tile, gypsum blocks, or metal lath and plaster are readily destroyed. None are fire-proof; they are only fire-resisting. When these partitions are exposed to tremendous temperatures and then subjected to a cold stream of water, such as that thrown by the fire-engines, they are liable to be damaged so badly that complete reconstruction will be necessary.

The commonest type of partition used in apartment-houses is built of 3-inch by 12-inch by 30-inch gypsum blocks. These blocks usually have cylindrical holes in them, which are placed horizontally. They are either made of gypsum and a filler of wood fibre, reeds, or similar material, or of gypsum and cinders in the proportion of two parts to three parts. These latter are often called cinder blocks, but are no more fire-resisting than those which use the fibre filler.

Blocks of this kind are very light, allowing large units to be easily and rapidly handled. They are soft, easily sawn and cut, and receive nails without cracking. Grounds to go behind door and window casings and base-boards can be toe-nailed directly to the blocks.

Heat is not readily conducted through these blocks, and when they were put to the fire test of the New York Bureau of Buildings neither fire nor water passed through the partition, but the blocks were calcined to about a depth of ¾ inch and washed away by the water-streams.

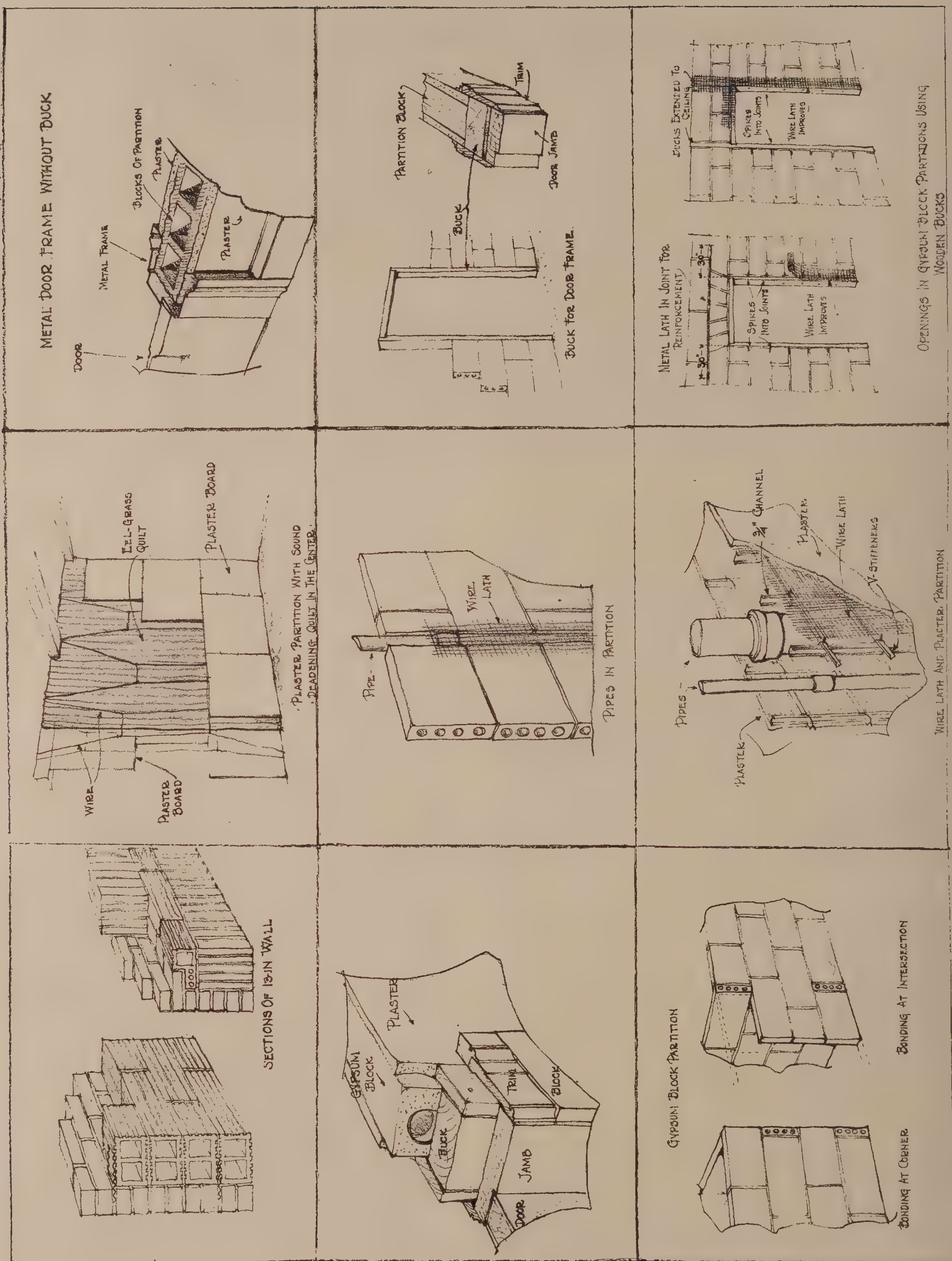
The weight of the 3-inch hollow, gypsum-block partition without plaster is 9 pounds per square foot, whereas the weight of a 3-inch hollow, porous terra-cotta tile partition is 17 pounds per square foot. When either type is plastered both sides, 10 pounds per square foot must be added.

There is not much difference between the conductivity of sound of the gypsum block as compared with the terra-cotta block of the same thickness.

But gypsum blocks are great absorbers of water. Often they will draw enough water from the plaster, carrying it down to the bottom, to warp base-boards and flooring near by. For this same reason, they are not suited to damp places in the building.

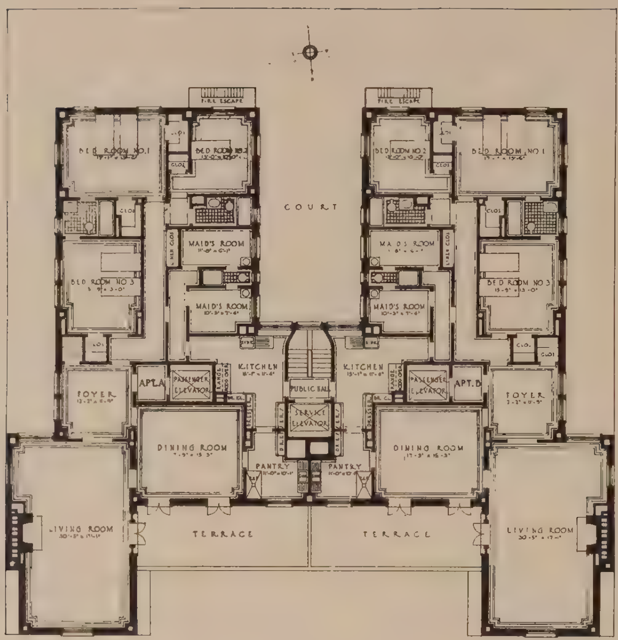
The tendency in apartment-house construction seems to be to use these gypsum blocks, laid up in gypsum mortar, for all partitions where the building code will permit them.

(*Continued on page 23*)


Sections Of 13-in Wall
Gypsum Block
Plaster
Trim
Block
Buck
Jamb
Door
Gypsum Block Partition
Bonding At Corner
Bonding At Intersection
Plaster Partition With Sound Deadening Quilt In The Center
Eel-Grass Quilt
Plaster Board
Wire
Plaster Board
Pipes In Partition
Pipe
Wire Lath
Wire Lath And Plaster Partition
3/4" Channel
Plaster
Wire Lath
V-Stiffeners
Pipes
Plaster
Metal Door Frame Without Buck
Door
Metal Frame
Blocks Of Partition
Plaster
Plaster
Buck For Door Frame
Partition Block
Trim
Buck
Door Jamb
Openings In Gypsum Block Partitions Using Wooden Bucks
Metal Lath In Joint For Reinforcement
30"
30"
Spikes Into Joints
Wire Lath Improves
Bucks Extended To Ceiling
Spikes Into Joints
Wire Lath Improves

FIRST FLOOR PLAN

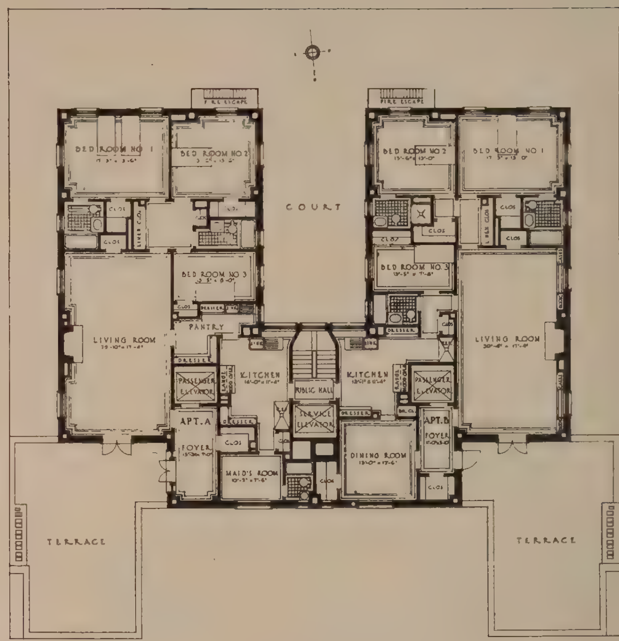
PROPOSED APARTMENTS, 2 EAST 86TH STREET, NEW YORK. Shape, Bready & Peterkin.



ALL DIMENSIONS ARE APPROXIMATE

• SCHEDULE OF APARTMENTS •
'A' 8 RMS 1 FOYER 3 BATHS
'B' 8 RMS 1 FOYER 3 BATHS

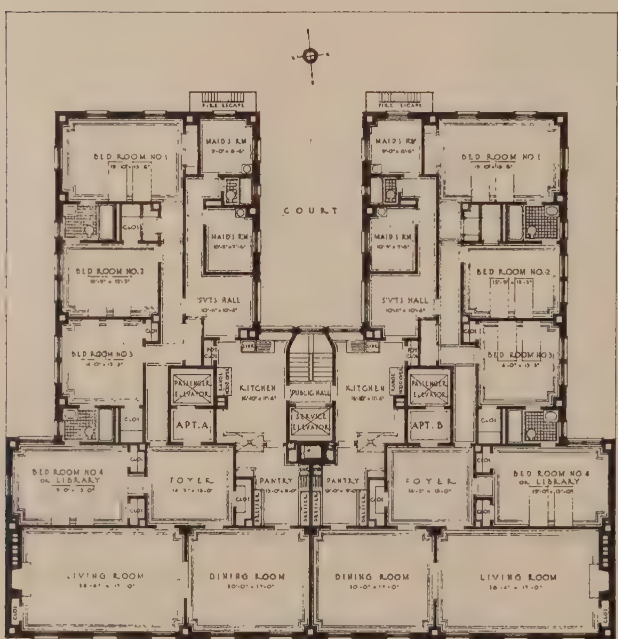
• NINTH · FLOOR PLAN •



ALL DIMENSIONS ARE APPROXIMATE

• SCHEDULE OF APARTMENTS •
'A' 6 RMS 1 FOYER 3 BATHS
'B' 6 RMS 1 FOYER 3 BATHS

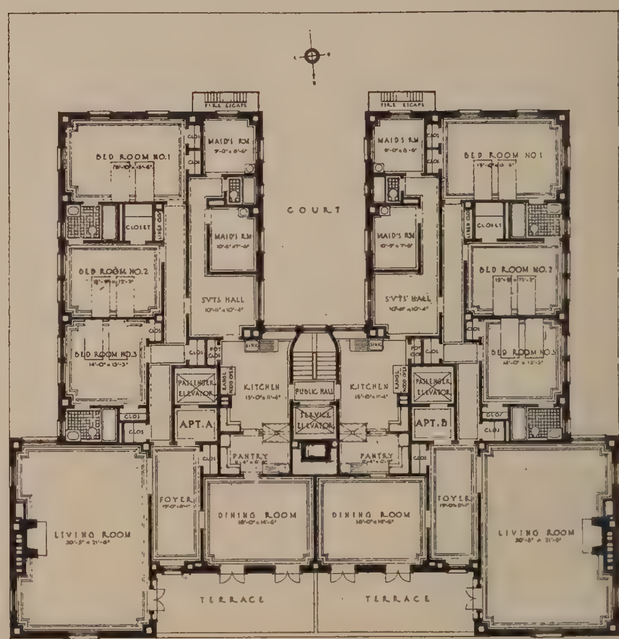
• TENTH · FLOOR · PLAN •



ALL DIMENSIONS ARE APPROXIMATE

• SCHEDULE OF APARTMENTS •
'A' 10 RMS 1 FOYER 3 BATHS
'B' 10 RMS 1 FOYER 3 BATHS

• TYPICAL · FLOOR · PLAN •
SECOND TO SEVENTH FLOORS INCLUSIVE



ALL DIMENSIONS ARE APPROXIMATE

• SCHEDULE OF APARTMENTS •
'A' 9 RMS 1 FOYER 3 BATHS
'B' 9 RMS 1 FOYER 3 BATHS

• EIGHTH · FLOOR · PLAN •

PLANS FOR NEW APARTMENT HOUSE, 2 EAST 86TH STREET, NEW YORK. Shape, Bready & Peterkin, Architects.

This building is held to be within the zone restricting the façade height to seven stories. The setbacks are planned to conform with the zoning law. There is a possibility that the building may be exempted and carried up to the full ten stories.

(*Continued from page* 19)

This usually means all partitions except those around stair-wells and elevator-shafts and public halls. Here the partitions are built of porous or semi-porous hollow terra-cotta tiles 4 inches thick by 12 inches high and 12 inches wide, laid up in cement mortar. Unlike the gypsum blocks, these tiles are usually set with cells vertical. The reason for using them around stair-wells, elevator-shafts, and public halls is that they show greater resistance to fire than gypsum blocks.

In many tests they have come out with undamaged records, such as "The only effect of the fire and water had been to remove the plaster from a portion of the inside of the partition," or "Neither fire, smoke, nor water passed through the partition itself. . . ."

Failures reported in the past of partitions built of terra-cotta tile have usually been caused by defective workmanship, such as building the partition blocks on top of the wooden underflooring, instead of on top of the concrete floor slabs.

In most of the new fire-proof apartments, 8-inch-thick terra-cotta blocks are used to back up the exterior front and court walls. With 4-inch-thick brick on the outside, or 4-inch stone ashlar, bonded at regular intervals, every sixth brick course, to the backing tile, a much lighter, dryer, and warmer wall is obtained. Steel is saved and labor is saved by the larger units.

Terra-cotta blocks are used, also, to protect interior columns in preference to gypsum blocks, although the latter affords an acceptable covering.

Besides block partitions there is another type which seems to be used now and then. It consists of wire lath, fastened to a very coarse wire net stretched between floor and ceiling. Plaster is applied to this on both sides, making a solid plaster partition 2 inches thick. This thin partition saves much floor space. It is a form of construction more popular with hotel apartments than with housekeeping ones.

These partitions transmit sound readily, and the introduction of a quilt of eel-grass in the centre of the partition improves them in this respect very much, since the air-cells in this quilt are poor conductors of sound.

Plaster partitions of this type, however, cannot be considered as first-class fire-proofing. There have been a sufficient number of failures in tests to cause a decided difference of opinion.

However, even in those apartments which use the block partitions there appear many metal-lath and plaster sections. Where a great number of water-pipes and soil-lines come in the line of partitions, these are constructed of two faces of plaster on metal lath, leaving room for the pipes in the middle. Usually ¾-inch pressed-steel channels are erected vertically every 12 inches, and horizontal V-shaped metal strips wired to them every 24 inches in height. On this framework, which is repeated on both sides of the pipes, is fastened the wire lath to which the plaster is fastened.

In bathroom partitions built of blocks, chases have to be cut through them the full thickness of the blocks for pipes. These are usually covered over with strips of metal lath, nailed to the blocks, and the plaster carried over the lath at the same time that it is applied to the blocks.

(*To be continued*)

Entrance to Women's City Club

THE building is to be erected on south side of Post Street, between Powell and Mason Streets, San Francisco, by the National League for Woman's Service.

The sketch, by Willis Polk, shows proposed doorway. This work will require the collaboration of a sculptor. The motif is symbolical of services rendered during war time by San Francisco women who, through their "Defenders' Clubs," comforted and cheered soldiers and sailors on their way.

Some Old Exterior Hardware in France

By Samuel E. Gideon

THESE rubbings and photographs of some interesting examples of exterior hardware were made here and there, during sketch trips the writer took, in connection with his regular architectural work in the Fontainebleau school the past summer. Knockers and their accompanying plaques, shutter hinges, and fasteners and gate latches are given preference.

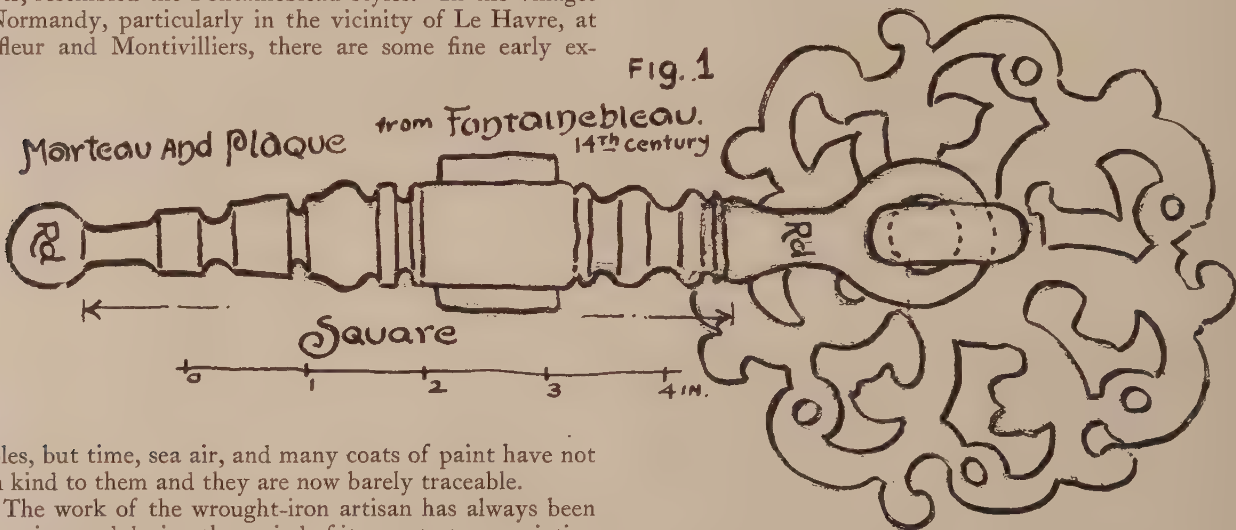
Most of the illustrations are of Fontainebleau examples, not because the writer spent his summer there and had special opportunity to find them, but for the reason that they have, seemingly, been more revered and preserved here than elsewhere—Montigny and Morel had some splendid examples, but quite different from the designs of near-by Fontainebleau. In Tours were found examples of simpler and earlier work, while those in Chartres and Sens, in many respects, resembled the Fontainebleau styles. In the villages of Normandy, particularly in the vicinity of Le Havre, at Harfleur and Montivilliers, there are some fine early examples, but time, sea air, and many coats of paint have not been kind to them and they are now barely traceable.

The work of the wrought-iron artisan has always been interesting, and during the period of its greatest appreciation many splendid things were done, but innovations, restorations, and a disregard for the simple beauty of the old have been responsible for the disappearance of myriads of excellent examples.

From the illustrations one may see that great interest and variety were shown in the knockers (marteaux) and their accompanying decorated plaques; always in splendid scale, whether for a simple small gate or great portal leading into the Court of Honor of a splendid château. The great variety in design and the excellence of these knockers and plaques are due to the fact that they were made by apprentices in wrought-iron work. The novice was required to work at the trade as apprentice for five years, and at the end of that time he had to show his ability in design and craftsmanship before he was passed to the stage of master mechanic.

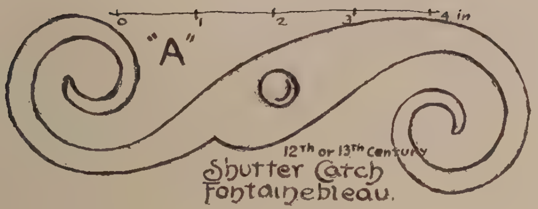
A favorite project with these apprentices was the design and execution of a fantastic and practical marteau and its plaque.

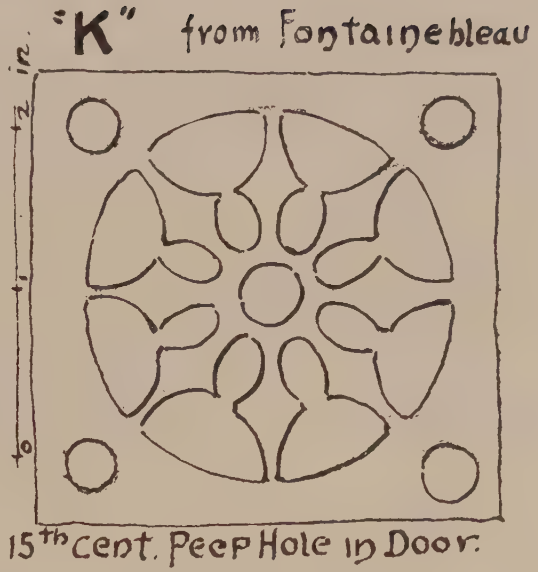
The early examples of the plaques for the marteaux are simple in design and are done in thin sheets of iron, Fig. B; later, thicker sheets were used and the edges chamfered and bevelled; in the Renaissance designs the metal sheet is thick and the edges rounded, so that the arabesques are almost in the half round, which made them difficult to rub. The escutcheon, Fig. X, and the knob and plaque, Fig. Y, of Renaissance design, were side by side, in line, on the same door in Chartres, and they were so bold in relief that the rubbing was quite difficult. The escutcheon, Fig. Z, with inverted keyholes, found on a huge door, also in Chartres, was in the boldest relief of all. During the rubbing of this plate, the occupants of the house returned from church and interrupted the proceeding. In this connection it was amusing to note that in most instances while these rubbings and photographs were being made, doors or gates were entered, shutters opened, and endless annoyances occurred to almost discourage the continuance of the work. The people, however, when they understood, were always interested and courteous.

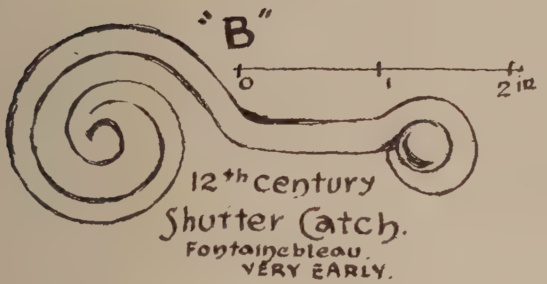


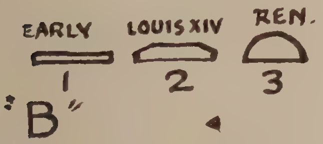
All the examples illustrated are wrought iron, except the shutter fasteners, Figs. M and N, which are cast iron. The escutcheons, plaques, and peep-holes are perforated in sheets of metal, and, of course, by hand. The hinged heads, Figs. M and N, and various other designs, were used to fasten outside blinds when swung open. The most common design of these was the head of a woman with hat resting jauntily on the side. These were found frequently in Fontainebleau, occasionally in Sens, Chartres, Harfleur, and Le Havre. A more common type of shutter fastener, especially in Fontainebleau, was the wrought-iron design like a letter S pivoted on a shank driven into the wall. There are many varieties of this letter S, the earlier being the heavier and more graceful, Figs. A and C. Fig. B is another early and extremely interesting design—also very rare. Sometimes the two fasteners for the same pair of shutters were of different design.

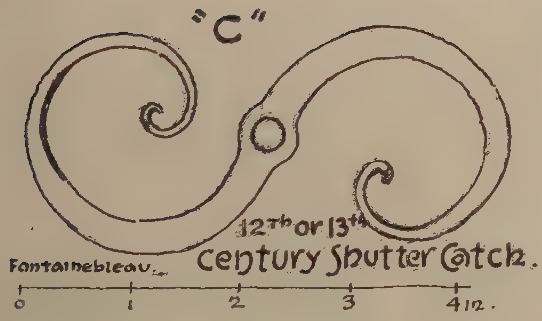
Many interesting keys and locks were also found. The key, Fig. R, has a meander sort of design, every groove of which fits an almost circular spring in the lock—a most

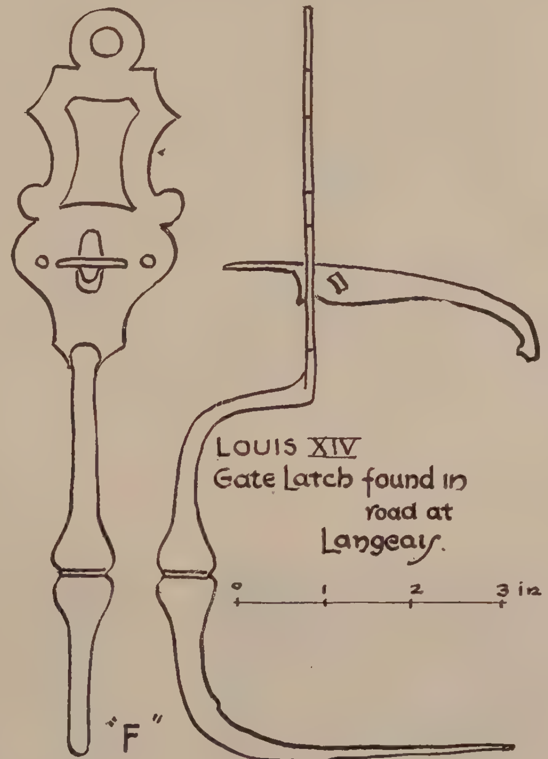

"A"
0 1 2 3 4 in
12th or 13th Century
Shutter Catch
Fontainebleau.


"K" from Fontainebleau
0 1 2 in.
15th cent. Peep Hole in Door.

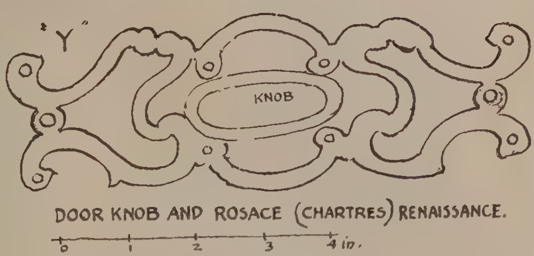

"B"
0 1 2 in
12th century
Shutter Catch.
Fontainebleau.
VERY EARLY.

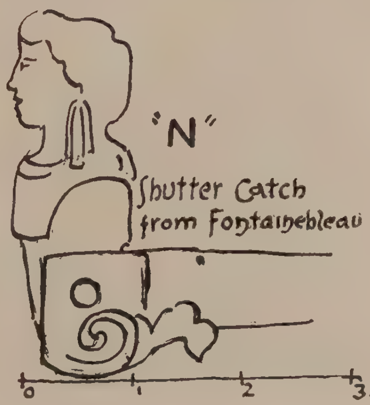

EARLY
1
LOUIS XIV
2
REN.
3
"B"


"C"
12th or 13th
century Shutter Catch.
Fontainebleau.
0 1 2 3 4 in.


LOUIS XIV
Gate Latch found in
road at
Langeais.
0 1 2 3 in
"F"


0 1 2 in
"M"
SHUTTER FASTENER
(FONTAINEBLEAU)


"Y"
KNOB
DOOR KNOB AND ROSACE (CHARTRES) RENAISSANCE.
0 1 2 3 4 in.


"N"
Shutter Catch
from Fontainebleau
0 1 2 3 in

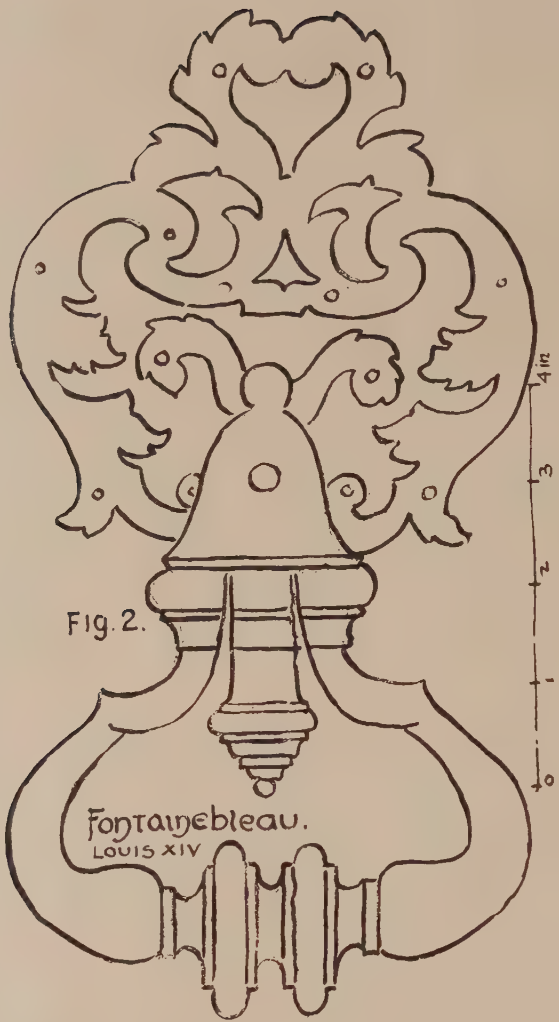
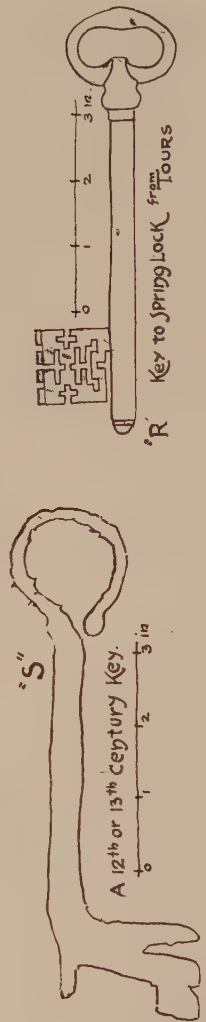


Fig. 2.
Fontainebleau.
LOUIS XIV
0 1 2 3 4 in


"R" Key to Spring Lock from Tours
"S"
A 12th or 13th Century Key.

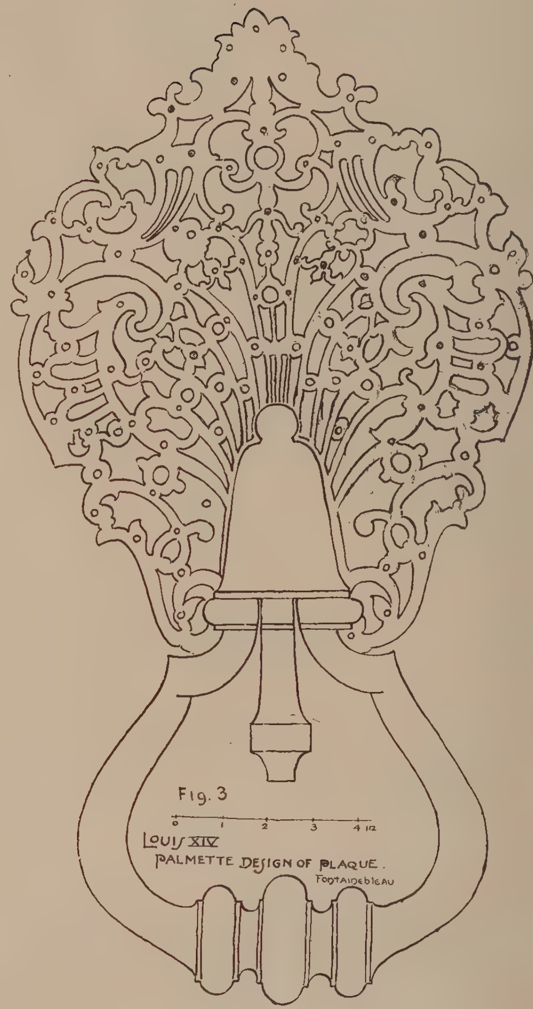


Fig. 3
Louis XIV
PALMETTE DESIGN OF PLAQUE.
FONTAINEBLEAU

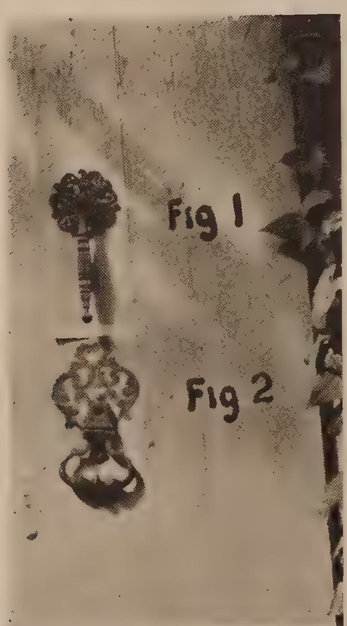


Fig 1
Fig 2

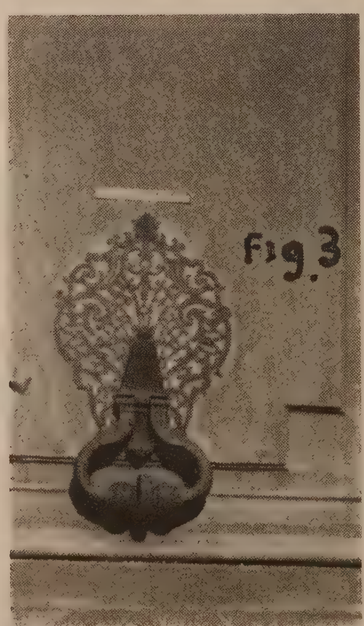


Fig. 3

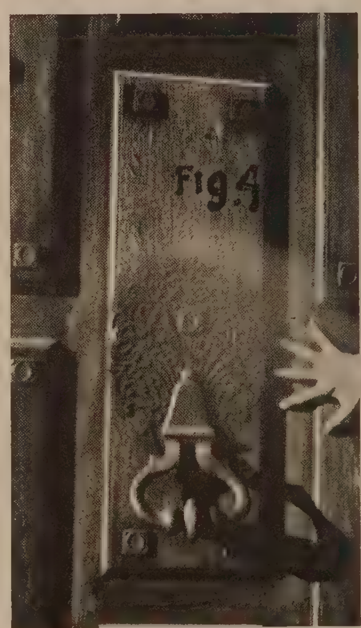
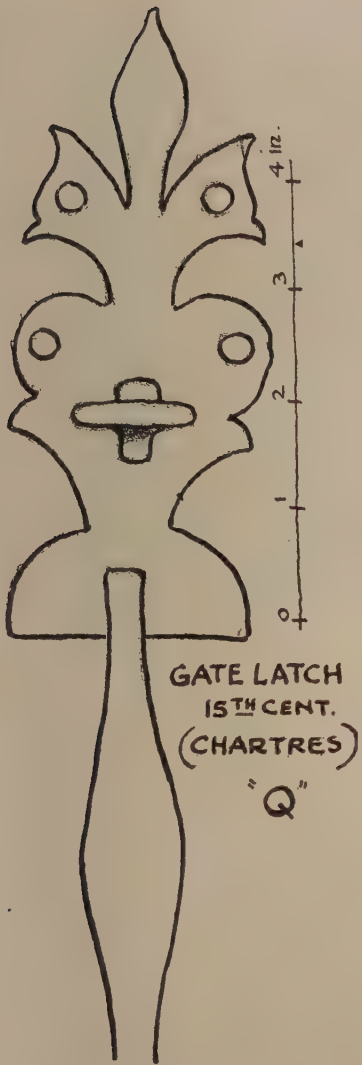


Fig. 4


GATE LATCH
15TH CENT.
(CHARTRES)
"Q"
0
1
2
3
4 in.

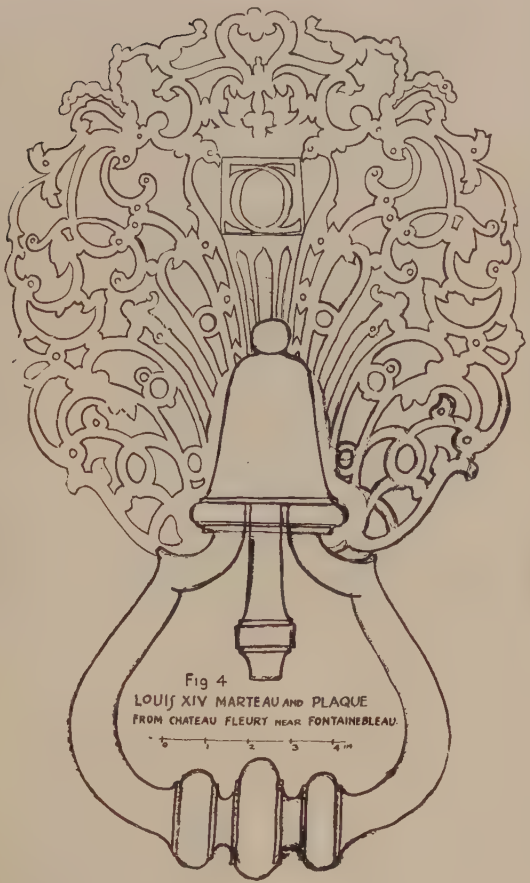
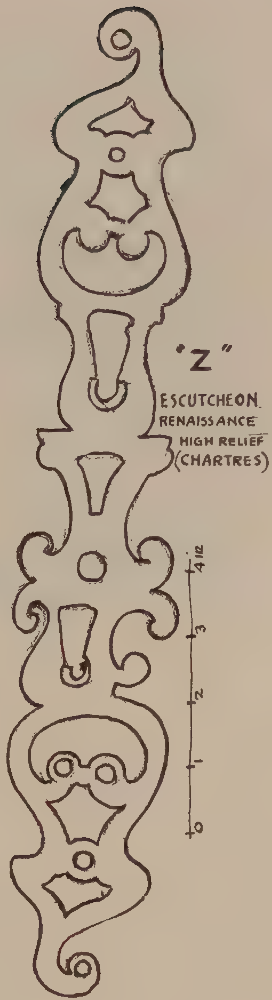
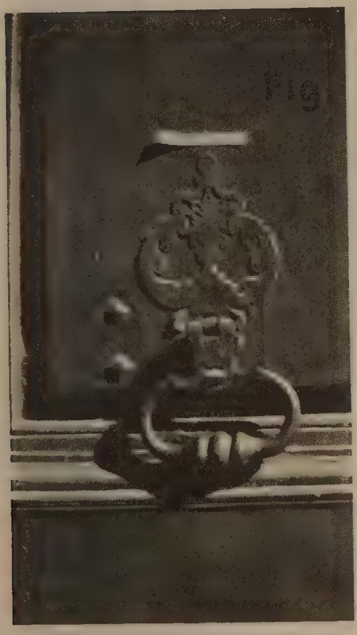
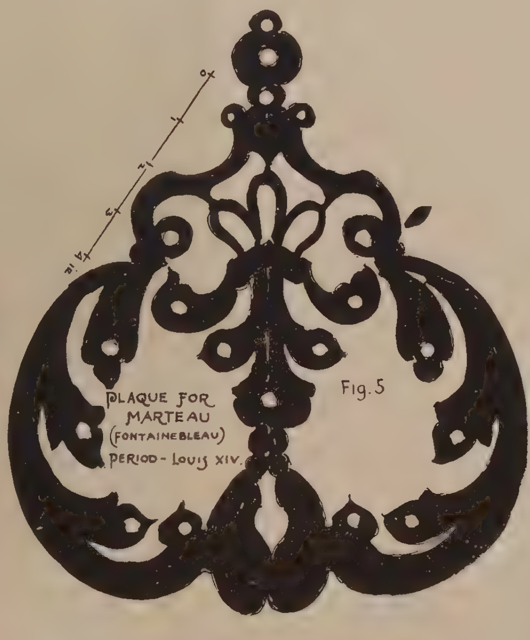
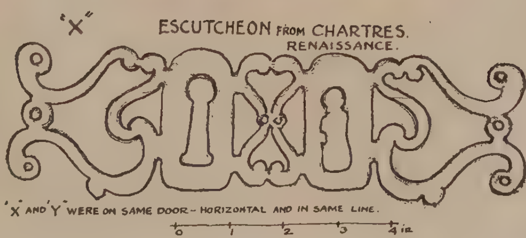


Fig 4
LOUIS XIV MARTEAU AND PLAQUE
FROM CHATEAU FLEURY NEAR FONTAINEBLEAU.
0
1
2
3
4 in


"Z"
ESCUTCHEON.
RENAISSANCE
HIGH RELIEF
(CHARTRES)
0
1
2
3
4 in




PLAQUE FOR
MARTEAU
(FONTAINEBLEAU)
PERIOD - LOUIS XIV.
Fig. 5
0
1
2
3
4 in


"X"
ESCUTCHEON FROM CHARTRES.
RENAISSANCE.
'X' AND 'Y' WERE ON SAME DOOR - HORIZONTAL AND IN SAME LINE.
0
1
2
3
4 in

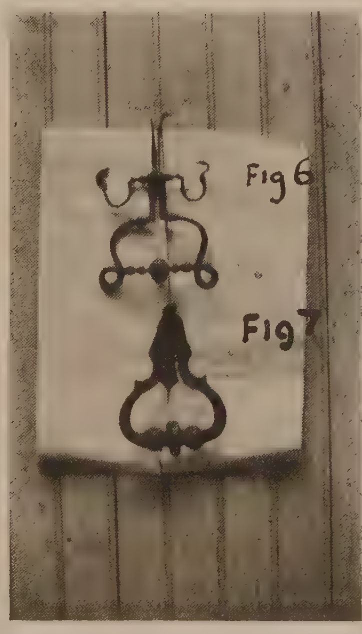
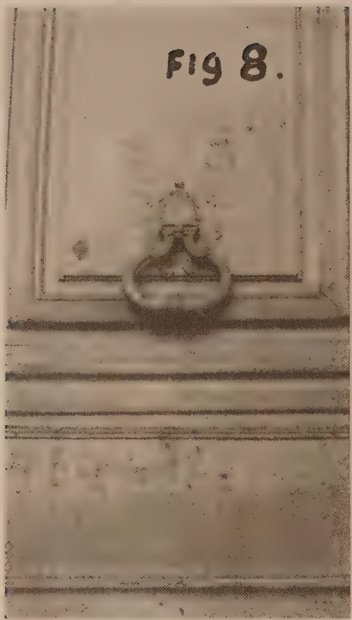
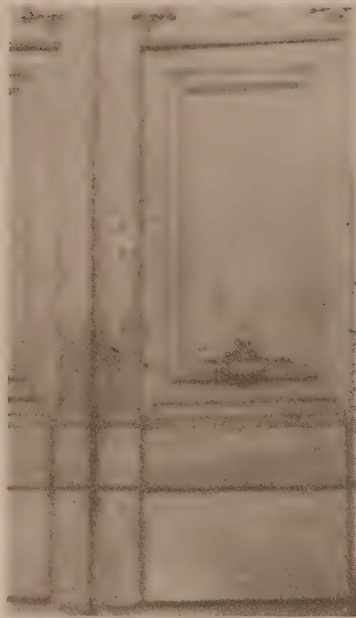


Fig 6
Fig 7

Fig. 5





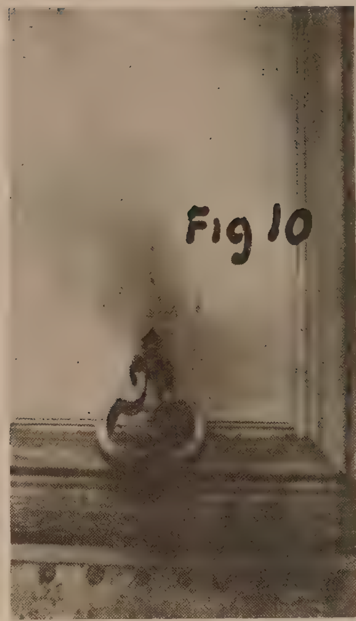


Fig. 9

ingenious device, in splendid working order after centuries of use, and anything but delicate. The very old key, Fig. S, is so ancient and weathered that it is eaten through in places.

Fig. K is a fifteenth-century peep-hole in the door to safeguard against unwelcome intruders. Behind the perforated plate is a solid metal door which latches. Fig. F is a gate latch found in the road at Langeais. Similar ones, but never duplicates, were on the gates to yards and courts adjoining the cathedral at Chartres, Fig. Q.

In the accompanying photographs there will be noted a strip of paper to give scale—the strip is 6 inches long. Figs. 1 and 2 were on a shed door in the yard of an antique shop. Full-size line-drawings of these two knockers are shown. Figs. 3 and 5 are also shown by line-drawing. Fig. 4, which is the marteau of the portal to Château Courances, shows clearly the interesting monogram C, both in the plaque and studded over the huge door. Fig. 6 is an extremely early, rare, and delicate marteau.

Figs. 8 and 9 are from the portal of the château of Madame Pompadour.

Tokyo Organizes Huge Building Company

A HUGE building construction company is being organized in Tokyo for the purpose of undertaking the construction of commercial and industrial buildings on the unit basis, says a report received by the Far Eastern Division of the Department of Commerce from its representative at Tokyo. This company plans to specialize in four-story reinforced concrete buildings designed to withstand earthquake shocks. Such material as cannot be obtained locally or which cannot be supplied in standard specifications will be obtained abroad, it is announced.

Funds for the promotion of this new company will, according to present plans, be obtained in large part from the government at a low interest rate. At present the company is marking time awaiting the announcement of the plans of the Capital Restoration Board as to the areas set aside for industrial and business purposes, etc.

The announcement of the general plans for reconstruction as worked out by the Reconstruction Board are expected any day. Meanwhile, temporary construction is in progress in a big way in Tokyo and Yokohama, but permanent building is, of course, being delayed until after promulgation of regulations designating industrial and commercial zones, height of buildings, materials to be used, etc.

It appears at present that in addition to securing abroad a large part of the iron and steel and lumber that go into the permanent reconstruction, considerable quantities of cement will have to be imported as well. Ordinarily Japan exports considerable cement, but the enormous demand that is bound to come with the commencement of permanent building activities, coupled with the destruction of about 8 per cent of Japan's cement production, will be greater than the industry can meet.

The annual capacity of Japan's cement mills was, before the earthquake, in the neighborhood of 14,000,000 barrels, and plans are under way which will, within six months' time, bring this up to 17,000,000 barrels, notwithstanding the losses suffered by the earthquake. Until such time as this increased output is brought about, it is expected that the domestic supply will be inadequate and that considerable cement will have to be imported. In anticipation of this need, the government has placed cement on the free list, effective until March 31, 1924.

Conservative bankers in Tokyo are advocating a programme of reconstruction spread over a period of twenty years and financed in most part through the flotation of domestic loans. In order to keep the yen on an even keel, however, they favor the flotation of foreign loans sufficient to cover all purchases made abroad.

Drafting-Room Mathematics

By DeWitt Clinton Pond, M.A.

FIFTEENTH ARTICLE

THERE are a few simple engineering problems which any draftsman can solve. The engineer is called upon to design for strength and economy, and it is necessary for him to determine the size of a beam which will carry a given load without calling for one that is too big, and therefore too expensive. It will be seen that part of his task is the determination of the load that the beam is to carry, and this often is the most tiresome kind of work, especially if there are several concentrated loads on a beam as well as wall and floor loads.

It is not the author's object, in this article, to attempt to explain more than the most simple types of calculations which the engineer must carry through. The reader will see that it is often advantageous for the architect to understand the processes which will be outlined later, as it is often possible to effect economies in design without changing any of the architectural features of a building.

In the laying out of a building in which a steel skeleton is used as the framework, the architect's first problem is the spacing of his columns so that they will not interfere with his plan, and yet so that the spans between them will not be excessive. Spans of over 20 feet usually are to be avoided, if possible, although there are innumerable cases where the architectural treatment of a building makes it necessary to have spans greater than this. On the other hand, it is not good practice to space columns nearer than 15 feet. A bay measuring 18 feet by 20 feet is very good, as will be shown later.

If concrete is used as the material out of which the frame is constructed, there are two types of construction to be considered. These are beam and girder or flat-slab construction. If beams and girders are to be used in the floor, then the same considerations are involved as are found in a building constructed out of steel. Rectangular bays are better than square ones, so that the beams can span the long way and the girders the short way of the bay. As the light loads come on the beams and the heavy ones are on the girders, this arrangement of the structural members will keep the depths more nearly alike.

Flat-slab construction is being used more and more. This type involves the use of a flat slab, without beams or girders, supported on columns which have caps that resemble inverted footings. When this type of construction is used, it is better to have square bays, and the most economical dimensions of such a bay are those which approach 20 feet square.

Now having established the column spacing, the architect can proceed with his design, but when the engineer comes to design his steel there are several questions which the architect will have to answer. How much fill will be required on above the slab? Will the beams and girders be exposed in the ceilings, or must they be concealed, either by the use of some type of flat-arch construction, or the use of a hung ceiling? What live loads are to be imposed upon the various floors of the building? Are the exterior walls to be carried on the steel, as in skeleton construction, or are the walls to act as supports for the floor steel, as in wall-bearing construction? Or will the walls be curtain walls, carrying no load and simply enclosing the building, in which case all the floor load must be carried on the steel?

To-day, more than in the past, it is customary to use a concrete slab between the beams, and if it is necessary to conceal the beams and girders, this is done by means of a hung ceiling. With regard to the live loads which are to be imposed upon the floors, these are usually determined by the building codes of the various cities. As a rule, in residential buildings the live loads are not under 40 pounds per square foot and not over 60. As a rule, the smaller load is used. In office-buildings the load per square foot is given as low as 60 and as high as 75 pounds. In places of public assembly the loads approach 100 pounds per square foot, and in warehouses and buildings used for manufacturing purposes the loads are higher. In some cases where heavy machinery is used the loads must be determined for various bays, and the calculations submitted to the superintendent of buildings for his approval.

Let it be supposed that the building is to be used, as far as the upper floors are concerned, for residential purposes, as a hotel or dormitory building may be used. Then the engineer will hardly have to consult the architect with regard to the live load, as he can see from the plan that on such a floor the live load will be 40 pounds per square foot, as required by the New York Building Code. There can be no disagreement about that. The architect will then tell the engineer: "I want these floors to be used as dormitories for students who cannot afford to pay much for their rooms, and therefore the construction must be the most economical possible. I'll have a concrete slab between the beams, and let the beams project below the ceiling of the floor below. I expect to have all the radiator connections made above the floor, so that the short horizontal runs of the steam-pipes will be exposed, and as there is only lighting conduit to be placed in the fill, I believe that there is need for only 2 inches of fill below 1 inch of finish. I'll use linoleum on this cement finish, and do away with sleepers and wood floors, as I must keep the cost down."

Now the engineer will begin to make use of mathematics. He will know that his slab will be 4 inches thick, and by referring to various handbooks, or to the building code of the city in which the building is to be erected, he will find the weight of cinder concrete, per square foot of floor area, is 9 pounds for every inch of thickness, and that for a 4-inch slab the weight will be 36 pounds. Above this slab there will be 2 inches of thin cinder concrete fill, weighing $7\frac{1}{2}$ pounds for every inch, so that this will weigh 15 pounds on every square foot of floor area. The 1 inch of cement finish on top of the fill is usually taken as weighing 10 pounds per square foot of floor area, so that the arch, fill, and finish will have a total weight of 61 pounds. There will be steel beams weighing approximately 30 pounds in every foot of length, and spaced 6 feet on centres, so that for every square foot of floor area the beams will weigh 5 pounds. Assuming that the girders will weigh 60 pounds per foot of length, and will be spaced 20 feet on centres, they will weigh 3 pounds for every square foot of floor area. This will give as the weight of the steel in the floor per foot of area a total of 8 pounds. The beams and girders must be fireproofed, and this coating of concrete, which is cast around the lower flanges of the beams, produces a surprisingly heavy load.

By referring to Fig. 56 it can be seen that there is no

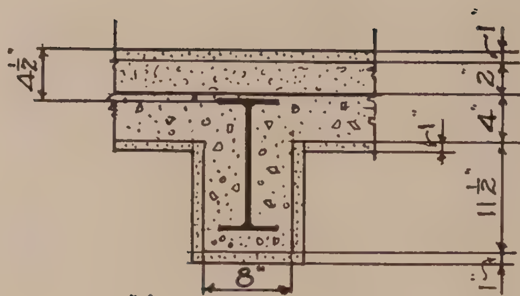


FIGURE 56

small amount of concrete encasing the 12-inch I-beam. The slab is 3 inches below the finished floor level, which is the level of the top of the girders. Beams are placed with their top flanges $1\frac{1}{2}$ inches below this, in order to avoid "coping," or cutting the flanges. This brings the tops of the beams $4\frac{1}{2}$ inches below the finished floor level, as shown in the figure. There are 2 inches of fireproofing below the bottom flange, and $1\frac{1}{2}$ inches on either side of this flange, so the rectangle of concrete below the slab, which is added for the purpose of fireproofing, measures $11\frac{1}{2}$ inches by 8 inches, and contains 92 square inches. In an article of this nature it should be mentioned that from this area the area of the beam, which might be assumed to be 10 square inches, should be deducted, leaving 82 square inches of cinder concrete.

In order to obtain the weight of this the reader can use his slide-rule to advantage, in accordance with the instructions given in the last two articles. One cubic foot of cinder concrete weighs 110 pounds, so if the cross-section of concrete shown in Fig. 56 contains 82 square inches, in a length of 1 foot, it will contain a fraction of a cubic foot, and if this is multiplied by 110 the result will be the weight of the concrete fireproofing. The calculations can be expressed as shown below.

$$\frac{82}{144} \times 110 = 62.6 \text{ pounds.}$$

If the reader cares to carry this calculation on a slide-rule all he has to do is to set the runner at 8–2, slide 1–4–4 under the line, and finally to set the runner at 1–1–0 on the C scale and to read the answer—6–2–6 on the D scale. The slide stays at the right, so the decimal point stays at two points to the right of the first digit.

Now the concrete around the beam weighs 62.6 pounds for every foot of length, and as the beams are spaced 6 feet on centres the concrete will add 10.4 pounds per square foot to the dead load of the floor.

The girders must be fireproofed also, and in the same manner as the concrete around the beams was found to add 10.4 pounds to the load, that around the girders will be found to add 5.8 pounds. Adding all the dead loads together, and adding 5 pounds for plaster on the soffit of the arch, the following results may be obtained:

Slab	36 pounds
Fill	15 pounds
Finish	10 pounds
Beams	5 pounds
Girders	3 pounds
Fireproofing	16 pounds
Plaster	5 pounds
Total	90 pounds

From the calculations it will be seen that the total dead load upon the floor is 90 pounds, and if to that the live load of 40 pounds is added, the total floor load is 130. So far there has been very little use made of mathematical calculations, as most of the computations were very simple. But even from the simple calculations it is possible for the reader to see that, for every inch of fill added to the floor, for any addition to the depth of the slab there must be additional weight calculated for the dead load of the floor.

The weights of all floor loads may be determined in the same manner as the one given above. Of course, owing to the fact that the determination of floor loads is about the first calculation which the engineer carries through, the exact weight of the steel cannot be determined absolutely, but the engineer is able to estimate it in the manner given above accurately enough.

It is a fairly useful bit of knowledge—that which pertains to the determination of the weight of floor construction—and by means of it the architect can find the sizes of his typical beams and girders while doing some preliminary work on his plans, before turning the work over for the more detailed investigation of the engineers.

Assuming that the beams are spaced 6 feet on centres and span 20 feet between girders. The area of floor carried by the beam is 120 square feet, the load per square foot is 130 pounds, and the load on the beam is 15,600 pounds. Every steel handbook contains a table of the allowable safe loads on beams for various spans. By looking through such a table, and bearing in mind that the span is 20 feet, it will be found that a 12-inch 27.9-pound beam will carry such a load.

Although the method of determining the size of the girder, which an engineer might use, involves the knowledge of bending moments and section moduli, such as few architects care to make use of, still the approximate load on the girder can be found by multiplying the area of floor which the girder carries by the unit load, and then it is only necessary to find the size of the girder in the safe load table, as was done in the case of the beam. The girder in the

FIGURE 57

example given above carries an area of floor (Fig. 57) measuring 18 by 20 feet. This gives an area of 360 square feet, and the load will be $360 \times 130 = 46{,}800$ pounds. Looking through the table of safe loads in the handbook for a span of 18 feet, it will be found that an 18-inch 45.2-pound I-beam will be heavy enough. It will be seen that the sizes of beams do not exactly correspond to the assumed sizes used in determining the weight of the floor construction.

It also will be seen that as far as the mathematical calculations are concerned, these are not as complicated as those used in various examples given in previous articles. For the type of engineering calculations that are involved in finding the sizes of beam which will carry uniform loads, such as floors, the mathematical work is surprisingly simple. But as soon as it is found that there are concentrated loads on a beam or girder, then the work becomes more complicated, and if the reader's knowledge of the methods of finding the sizes of beams is limited to the information in the foregoing paragraphs, it would be wiser to hand over a problem involving concentrated loads to an engineer.

Although the reader is probably already aware of this, it may be advisable to call his attention to the fact that all beams and channels are known by their depth and weight. As an example, a beam may be referred to as a 12-inch 27.9-pound I-beam, or a channel is noted as a 15-inch 40-pound channel. It may have been noted, in referring to the tables of safe loads, in carrying through the problems given above, that there were two beams which might have been used to carry the 15,600-pound load. One was a 10-inch 35-pound I-beam, and the other was the 12-inch 27.9-pound beam. The beam of greater depth and less weight was selected, as the cost of the beam is determined by its weight, and the lighter beam is therefore the less expensive.

It not infrequently happens that the architect is more interested in maintaining a clear height in a room than in saving a certain amount of money as the result of using a deeper beam. In such a case the architect may make use of the type of calculations given above, in order to see if it is not possible to substitute a heavier but more shallow beam where more head-room is required.

Nothing has been said about partition loads, as the floor under consideration happened to be an open one. Where such a light live load is used, however, and where there are many partitions, the weights of these should be considered. A plastered terra-cotta partition may weigh from 25 to 40 pounds per square foot, depending upon its thickness. If a 4-inch block is used, and the partitions are 10 feet high and spaced 10 feet on centres, an additional weight of 20 pounds would have to be added to the floor load.

There are certain refinements which might be brought out with regard to the above design. Certain engineers leave out the weight of the girder and its fireproofing when determining the load on the beams. This gives a lighter load on the beam, but in the present case no lighter beam could be used.

Book Reviews

AMERICAN ARTISTS. By Royal Cortissoz, author of "Art and Common Sense," "John La Farge: a Memoir and a Study," etc. Charles Scribner's Sons, New York.

There are many writers about art and art matters who only add to the confusion of thought that we bring from the average exhibition of current pictures. The jargon of the average critic too often hides an utter lack of any real thought or capacity for intelligent judgment.

Mr. Cortissoz always has something to say and he has the happy faculty of giving us his impressions with a clarity and sanity of phrase and view that are both refreshing and enlightening. In the opening essay on "The Critic's Point of View," is revealed the author's attitude toward the innovators: "Post-Impressionists, the Futurists, the Cubists, the Expressionists, the whole variegated company, though a conservative, I have watched with an eye single to the detection of the first glimmer of a rational substitution of new lamps for old. Save in some of the aspects of Post-Impressionism I have observed no sign." In a chapter on "Ellis Island Art" he says: "There is something in this art situation analogous to what has been so long going on in our racial melting-pot. The United States is invaded by aliens, thousands of whom constitute so many acute perils to the health of the body politic."

Mr. Cortissoz writes of a number of famous men in American art, Thayer, Dewing, George Fuller, DeForest Brush, Thomas Eakens, Kenyon Cox, Vedder, Ryder, Arthur B. Davies, and many others. He gives us impressions of the men and their work and their place in American art with a genial humanness, that appraises their good qualities without overlooking limitations.

There is an appreciation of Stanford White and a chapter on the American Academy of Rome, "that institution sprang from the genius of a great architect, Charles F. McKim." Here is art criticism that has a convincing quality of sincerity as well as vision and a sympathetic and penetrating understanding. It is based on ideas and comprehension, with a sufficient note of humor and an appreciation of the value of anecdote in revealing character.

STRESSES IN FRAMED STRUCTURES. Compiled by a staff of specialists. Editors in Chief, George A. Hool, S.B., Consulting Engineer, Professor of Structural Engineering in the University of Wisconsin, and W. S. Kinne, B.S., Professor of Structural Engineering in the University of Wisconsin. McGraw-Hill Book Co., 370 Seventh Ave., New York.

This is another of a series designed to provide the engineer and the student with a reference work covering thoroughly the design and construction of the principal kinds and types of modern civil engineering structures.

The Contents include: "Trusses in General," "Principles of Statics," "Reactions," "Roof Trusses," "Bridge Trusses," "Lateral Trusses and Portal Bracing," "Deflection of Trusses," "Redundant Members," "Secondary Trusses," "Statically Indeterminate Frames," "Wind Stresses on High Buildings," "Rectangular Tower Structures."

CARPETS AND RUGS. HOW THEY ARE MADE. HOW TO SELECT THEM. HOW TO CARE FOR THEM. By Otis Allen Kenyon. The Hoover Co., North Canton, Ohio.

This is a useful and instructive little book on a subject of interest to us all. The choice of floor-coverings should not be left to chance; even a little knowledge is better than none. Here is a great deal of knowledge put into our hands in such a way as to make the information comprehensible even to the non-expert.

The many illustrations make clear just how rugs and carpets are made, their good and bad points.

GOTHIC ORNAMENTS SELECTED FROM VARIOUS ANCIENT BUILDINGS IN ENGLAND AND FRANCE, EXHIBITING NUMEROUS SPECIMENS OF EVERY DESCRIPTION OF DECORATIVE DETAIL. From the XIth to the Beginning of the XVIth Centuries. By Augustus Pugin, Architect. New and Revised Edition. C. W. Kuehny, Bosworth Road, Cleveland, Ohio.

Students will welcome this edition of a famous and valued book. It is among classics of architectural literature. As the writer of the publisher's note well says: "It is one of those Technical Art books which is never out of date." It is valuable for the architect and notably for the carver in wood or stone.

ARCHITECTURAL COMPOSITION. By Nathaniel Cortland Curtis, A. I. A., Professor of Architecture and Head of the School of Architecture in the Tulane University of Louisiana; formerly Associate Professor of Architectural Design in the University of Illinois; professor of Architecture in the Alabama Polytechnic Institute. Illustrated with drawings by the author. J. H. Jansen, publisher, Cleveland, Ohio.

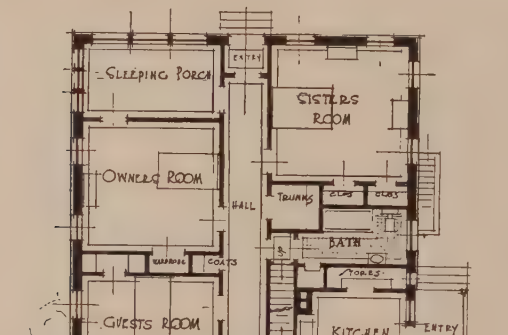
No subject should be of more interest to the student, for a knowledge of composition is the foundation upon which all good architecture and art is based. Many of the failures that are too conspicuously notable in our cities are due to a lack of a sufficient study of this important subject.

This book is the result of many years of teaching and is based "on plan as taught in the Atelier, Architectural Schools, and Universities."

It is divided into the following parts.

The Nature of Architecture, The Elements of Architecture, The Elements of Composition, Primary Rules of Composition, The Program of the Building, The Parti, The Development of the Parti.

It is a comprehensive review of the æsthetic laws that have governed all good architecture and a detailed analysis of the elements that enter into various types of structures. The author's many drawings add greatly to its interest and value.



House and Plan. Mrs. E. V. White, Macon, Ga. Dunwody & Oliphant, Architects.

"How to Own Your Home" Becomes a "Best Seller"

IN announcing the sale of more than 200,000 copies of "How to Own Your Home" within less than two months of publication, the Department of Commerce states that orders have come very largely from building and loan associations, savings-banks, dealers in lumber and other building materials, furniture companies, and other organizations that have bought the booklet for distribution among their customers.

Many banks and industrial concerns have distributed the booklet to their employees, and it has also been purchased in quantity for the use of school and college classes in which housing and home economics are studied.

Although the number of single copies of "How to Own Your Home" sold at five cents a copy has been very great, orders for large lots have been especially stimulated by the low rates charged for quantity purchases. The Superintendent of Documents, Government Printing Office, Washington, handles the sales and makes quotations as follows: $4.00 a hundred, $35.00 for one thousand, and $20.00 for each succeeding thousand on large orders. The Superintendent of Documents cannot make shipment of orders unless they are prepaid.

The Quality of Materials

By Richard P. Wallis

SIXTH ARTICLE

U. Paint

THE Supervisor is more or less at the mercy of the unscrupulous painting contractor as substitutions and adulteration of paint are extremely difficult to detect. For this reason it is usually specified that paints be brought to the job in their sealed original packages.

I. *Laboratory Tests.*—If any serious doubt is entertained as to the quality of the paint or its ingredients it may be subjected to chemical analysis to determine of what materials it is constituted.

II. *Field Tests: (a) White Lead.*—1. Heat a small sample of the lead on a piece of glass. If pure it will turn yellow.

2. Place a small sample of the lead on a piece of charcoal and with a blow-pipe blow the flame of a gas-jet or small spirit lamp upon it. The lead will be quickly reduced to metallic lead and the baryta or silex will separate from the lead. This test will indicate whether or not the material is a pure lead compound, but will reveal nothing regarding its quality as a paint. The soluble salts of lead, such as the acetate or the nitrate, will yield metallic lead with the blow-pipe more readily than will the carbonate, but when found in white lead are very detrimental. On the other hand, the more stable white compounds of lead, such as the oxy-sulphate, though they may be pure lead compounds, will not reduce to the metallic form under the blow-pipe without the use of a flux, except in the hands of a skilled operator.

3. Sulphate of baryta is a common adulterant and may often be detected by rubbing a small portion of white lead between the fingers and noting the gritty feeling that it produces.

(*b*) *Red Lead.*—Inspection of red-lead paint by weight is not only the easiest, but is accurate enough for all practical purposes. All that is needed is a gallon measure of known weight and a pair of scales.

Climate and other conditions under which the metal surfaces are to be painted have much to do with establishing what the weight of red-lead paint should be, a trade principle that is well known to all painters and paint inspectors.

Specifications for railroad and public work, municipal and state, require that red-lead paint shall weigh not less than twenty-four and not more than twenty-eight pounds per gallon. Government specifications allow the same maximum weight, but place the minimum weight at twenty-six pounds to the gallon.

The National Lead Co. recommends the use of a pure red-lead paint weighing about twenty-five pounds per gallon, the weight, of course, to be varied wherever conditions affecting the paint demand it.

As red lead is the heaviest pigment, any adulteration will show a lessening of weight. The adulterated red-lead paints on the market usually weigh not more than eighteen pounds per gallon, but in order that this or any other paint be subject to accurate inspection it is necessary to know the weight per gallon of the paint mentioned in the specifications.

(*c*) *Linseed-Oil.* 1. *Adulteration.*—Linseed-oil is sometimes adulterated by the addition of fish-oil, mineral oil, or kerosene. The presence of these adulterants may be determined by rubbing a few drops in the palms of the hands. Heating in this manner causes the unmistakable odor of the adulterant to become pronounced. If even a faint foreign odor is detected the oil should be rejected as unfit for use.

2. *Adulteration.*—A test for the presence of fish-oil is as follows: Put equal parts oil and strong nitric acid in a glass phial, shake well and allow to stand from ten to thirty minutes. At the end of that time the liquid will have separated into two layers. If the oil is pure, the upper layer will be a muddy olive-green, which will gradually change to brown, and the lower layer will be almost colorless.

If there is fish-oil present in the mixture, the upper layer will be a decided deep red-brown, and the lower layer a deep red or cherry color.

3. *Boiled Linseed-Oil.*—In order to determine if a sample of linseed-oil has been boiled sufficiently, dip into the oil a piece of well-sized writing-paper and hang it up to dry. The submerged portion of the paper will remain greasy in appearance if the oil is improperly boiled. No mark will be left by the thumb and finger when placed against the paper if the oil is properly boiled, and the surface will have somewhat the appearance of having been varnished.

4. *Raw Linseed-Oil.*—Raw linseed-oil varies in color from pale straw to dark amber and has a mild characteristic odor and frequently contains considerable sedimentary, cloudy, or mucilaginous matter.

(*d*) *Varnish: Rosin.*—Varnish should contain no rosin or petroleum products and should contain somewhere around 17 per cent of copal gums. An easy method of testing varnish for rosin is to put equal parts varnish and strong ammonia in a glass phial and shake well. If there is rosin present in the varnish it will settle out in a solid lump, the size of which is determined by the relative amount of rosin contained in the mixture.

V. Tile

Tiles, which are essentially thin-walled flat pieces of burned clay of various shapes and sizes, may be used for many decorative purposes.

I. *Field Tests: (a) Crazing.*—Glazed tile, such as those used in baths, hallways, kitchens, and other locations where it is desirable to maintain a high degree of cleanness, come under this head. The principal consideration in this connection is the quality of the glaze. It should be free from the fine hair-line cracks known as crazing and should have no tendency to show this defect, which sometimes develops after the tile has been placed in position. This tendency may be tested by placing several tiles in a concentrated solution of common salt and boiling for three hours. The tile should be removed from the solution while hot and allowed to cool. No cracking of the surface should be observed.

(*b*) *Floor Tile.*—1. The vitreous floor tile should have a water absorption of not more than 0.5 per cent by weight.

2. Quarry tile should have a water absorption of not more than 8 per cent by weight.

(*c*) *Roofing Tile.*—1. Such tile should possess weather-resisting qualities and should stand the Glauber Salt test as outlined in paragraph *J*–II–(*e*).

2. The water absorption should be not more than ten per cent by weight.

3. The tiles should be clean in color and possess no tendency to effloresce. This latter quality should be guaranteed by the manufacturer.

W. Sanitary Clay Ware

Wash-basins, closets, and bathtubs are usually made of one of two classes of materials, true porcelain or the so-called earthenware. The former is a white, thoroughly vitrified and practically non-absorbent body, which would be translucent if it were thin enough. The glaze applied is a hard, colorless glass. The second type consists of a porous, buff-colored fire-clay body, which is covered with a thin layer of opaque porcelain upon which a transparent or semi-opaque glaze is also applied.

I. *Field Test:* (*a*) *Porcelain.*—1. A drop of ink applied on a fractured surface will not be absorbed and may easily be wiped off.

2. This material should absorb not more than 1 per cent, by weight, of water.

(*b*) *Earthenware.*—A fractured surface readily absorbs liquids.

II. *Inspection:* (*a*) *Porcelain.*—1. This material, if chipped, will reveal a white, dense body characteristic of this type of material.

2. When lightly struck, the article should emit a clear and not a deadened sound.

3. This material should be inspected for such defects as crazing, fine cracks in the body, flaws, blisters, and bare spots.

(*b*) *Earthenware.*—1. This material, if chipped, will reveal the buff or yellow body of the earthenware.

2. Other characteristics similar to those of porcelain.

X. Glass

I. *Inspection:* (*a*) *Grade.*—Ordinary window-glass comes in two grades, AA, first quality, and A, second quality.

1. The AA glass should be clear, free from bubbles or blisters, burnt specks or burns, cords or strings. It should have an even surface and be well flattened.

2. The A glass admits of small defects, as small strings or lines, small blisters, when not too close to one another or located in the centre of a sheet. It should be well flattened, even surfaced, and devoid of noticeable and prominent defects.

(*b*) *Dimensions.*—1. Single-strength glass measures approximately twelve lights to the inch in thickness and weighs about 16 ounces per square foot.

2. Double-strength glass measures approximately nine lights to the inch in thickness and weighs about twenty-four ounces to the square foot.

Y. Galvanized Iron

I. *Inspection.*—The coating should be inspected to determine whether or not it is adherent, continuous, free from pinholes or bare spots, and of a thickness which will stand bending without cracking or peeling.

Surface imperfections can usually be detected by careful inspection, the adherence of the coating can be approximately measured by bending the sheet and a general idea of the thickness of the coating be obtained by scraping through the covering and examining with a magnifying-glass.

Z. Hardware

I. *Inspection.*—Occasionally hardware is supplied consisting of iron or steel coated with a thin layer of brass or bronze. The actual metal can be readily determined by scratching through the outside coating at some unexposed part.

AA. Nickel-Plated Pipe

I. *Inspection.*—These fittings are usually made of brass, coated with a thin layer of nickel. Such surfaces, when properly plated, remain bright with minimum attention.

These articles should be inspected for surface imperfections, and the thickness of the coating determined by scratching through to the base.

BB. Built-up Roofing

Built-up roofs are composed of felts soaked in tar or asphalt. The various plies are mopped on one after the other until the entire surface is built up to the required number of plies.

I. *Laboratory Tests.*—The American Society for Testing Materials has compiled various standard specifications covering the various materials used in roofing of this kind.

(*a*) *Tar Pitch.*—The melting-point of tar is that temperature at which the cube of pitch drops from the wire on which it is suspended when subjected to gradual heating in a water bath. This temperature is between 135 and 155 degrees Fahrenheit. The melting-point of pitch used on any particular job should not vary more than 5 degrees either way from that specified.

The "free-carbon" content (the matter insoluble in carbon bisulphide or a benzol-toluol mixture) should be between 15 and 35 per cent.

(*b*) *Asphalt.*—The melting-point of asphalt as determined by the cube method in an air bath should be between 140 and 212 degrees Fahrenheit.

II. *Inspection:* (*a*) *Tar.*—If the tar presents a granular appearance when pulled out slowly it indicates too high a percentage of free carbon and should not be used.

(*b*) *Asphalt.*—Asphalt for roofing purposes should not be unduly hard and brittle, but should lend itself to slow bending without breaking. It should show some ductility; that is, the property of allowing itself to be pulled out without breaking off sharply.

(*c*) *Felt.*—1. The heavier a felt is the more durable and uniform it is apt to be.

2. A portion of the felt torn apart and examined with a good magnifying-glass should show a thorough saturation of the fibers, and none of them should present a clean or yellow appearance. This does not apply to asbestos felts, as this latter material does not absorb bituminous materials.

(*d*) *Roofing in Place.*—Felt and pitch roofing may be inspected after laying (but before applying gravel), by cutting a slit not less than 3 feet long at right angles to the way the felt is laid. These slits are properly repaired by the roofing contractor after inspection.

CC. Battleship Linoleum

The United States Government in buying battleship linoleum requires, among others, the following tests:

I. A strip two inches wide with the face out will bend around a bar of three-inch diameter without the slightest sign of cracking at a temperature of 70 degrees Fahrenheit.

II. A sample shall withstand a pressure of eighty pounds for sixty seconds, transmitted by a $\frac{1}{4}$-inch square iron bar having a flat bottom and rounded edges, without breaking the surface or making a permanent indentation in the same, at a temperature of 70 degrees Fahrenheit.

III. A sample six inches by three inches with burlap backing removed, after being submerged for twenty-four hours in water at 70 degrees Fahrenheit, shall not absorb more than $3\frac{1}{2}$ per cent of its weight of water.

DD. Window-Shades

To determine the quality of the material from which window-shades are made it is only necessary to lightly scratch a piece of the material with the point of a knife.

Tiny particles of chalk or clay filler will become detached in the case of the cheaper grades of material.

EE. Plumbing Tests

I. *Drainage System.*—Two tests, a roughing test and a final test, should be made to the drainage system in every building in order to ascertain whether or not the system is tight and consequently safe to use.

(*a*) *Roughing Test.*—This test consists in subjecting the roughing in work either in full or in part to a considerable internal pressure. This pressure may be induced either by the use of water or compressed air. The use of water has much to recommend it save at low temperatures, when its tendency to freeze and damage the entire drainage system must be taken into consideration.

1. *Water Test.*—The entire system, with the exception of the opening above the roof, is first made as tight as possible by plugging all outlets. In the case of a wrought-iron system screw plugs or capped nipples are used. Cast-iron pipe requires special plugs or stoppers that may easily be removed without jarring the entire system when the test is completed.

Water is then admitted to the system slowly from the bottom. As the water level rises in the pipes all weaknesses, such as loose joints and defective fittings, are evidenced by the escape of water therefrom. Filling the system from the bottom avoids confusion in locating the leaks should they occur.

In case the system is first filled to the top, the plumber should start at the top and work down while looking for leaks. Loose joints, where discovered, must be recaulked and defective fittings replaced.

In the case of tall buildings the drainage system must be tested in sections, in order to avoid the dangerously high pressure caused by too great a head of water. This is accomplished by omitting a short piece of pipe between each section to be tested separately. The same procedure as that outlined above is carried through for each section beginning at the top. As each section is tested it is connected to that above it and the connection in turn subjected to a head of ten feet of water and so on until the entire system is tested and connected up.

2. *Compressed Air.*—A uniform pressure of about 100 pounds per square inch is applied to all parts of the system, after it has been made as tight as possible, by means of an air pump. Any leakage in the system is indicated by a falling off in the pressure registered by the air gauge.

The main disadvantage in this method of testing lies in the difficulty experienced in locating the leak. This is usually accomplished by applying soap-suds to the top of the stack in such a way as to cause them to run down the sides. Bubbles will form where the suds encounter the escaping air. The larger leaks should first be located in this manner and stopped, after which the smaller leaks may be found by daubing soap-suds on the pipes and joints with a paint-brush. A uniform pressure should be maintained throughout the entire duration of the test.

(*b*) *Final Tests.*—These tests are applied to a drainage system after all fixtures have been permanently set and connected and the water ready to turn on.

Care should be taken to seal the traps with water, so that the smoke or chemicals used in the tests cannot blow through.

1. *Peppermint Test.*—After closing the fresh-air inlet, two ounces of oil of peppermint are emptied into each stack from the roof. A gallon of hot water is then poured down each stack in order to vaporize the oil. The vent stacks are then plugged and the leaks located where they occur throughout the building by the odor of the escaping fumes.

In the case of buildings over five stories in height two additional ounces of oil of peppermint should be used for each additional five stories.

This test is rather unreliable, as it does not indicate small leaks, owing to lack of pressure generated in the pipes. This fault is sometimes overcome by forcing the fumes through the system by means of a small air pump.

2. *Smoke Test.*—Forcing a dense pungent smoke into the system under a pressure sufficient to balance a column of water one inch in height, develops sufficient internal pressure to disclose the location of all leaks both large and small by means of the escaping smoke.

This method of detecting faults in the drainage system is more positive than is the use of peppermint, as it is the sense of sight that is called upon in making the necessary observations rather than the sense of smell.

FF. Plaster

I. *Calcined Gypsum.*—Probably the best test for the purity of a calcined gypsum is its behavior when mixed with water. A ready-prepared plaster should set quite hard in from thirty minutes to one hour.

GG. Sheet Metal

The thickness and corresponding unit weight of sheet iron and steel is usually referred to in terms of its "gauge."

There are several well-established tables of gauges in use at the present time, but the only table enjoying legal

TABLE OF UNITED STATES STANDARD GAUGE FOR SHEET AND PLATE IRON AND STEEL

NUMBER OF GAUGE	APPROXIMATE FRACTION INCH	THICKNESS DECIMAL INCH	WEIGHT PER OUNCES	SQUARE FOOT POUNDS
0000000	1-2	0.5	320.	20.
000000	15-32	0.46875	300.	18.75
00000	7-16	0.4375	280.	17.50
0000	13-32	0.40625	260.	16.25
000	3-8	0.375	240.	15.
00	11-32	0.34375	220.	13.75
0	5-16	0.3125	200.	12.50
1	9-32	0.28125	180.	11.25
2	17-64	0.265625	170.	10.625
3	1-4	0.25	160.	10.
4	15-64	0.234375	150.	9.375
5	7-32	0.21875	140.	8.75
6	13-64	0.203125	130.	8.125
7	3-16	0.1875	120.	7.5
8	11-64	0.171875	110.	6.875
9	5-32	0.15625	100.	6.25
10	9-64	0.140625	90.	5.625
11	1-8	0.125	80.	5.
12	7-64	0.109375	70.	4.375
13	3-32	0.09375	60.	3.75
14	5-64	0.078125	50.	3.125
15	9-128	0.0703125	45.	2.8125
16	1-16	0.0625	40.	2.5
17	9-160	0.05625	36.	2.25
18	1-20	0.05	32.	2.
19	7-160	0.04375	28.	1.75
20	3-80	0.0375	24.	1.5
21	11-320	0.034375	22.	1.375
22	1-32	0.03125	20.	1.25
23	9-320	0.028125	18.	1.125
24	1-40	0.025	16.	1.
25	7-320	0.021875	14.	0.875
26	3-160	0.01875	12.	0.75
27	11-640	0.0171875	11.	0.6875
28	1-64	0.015625	10.	0.625
29	9-640	0.0140625	9.	0.5625
30	1-80	0.0125	8.	0.5
31	7-640	0.0109375	7.	0.4375
32	13-1280	0.01015625	6.5	0.40625
33	3-320	0.009375	6.	0.375
34	11-1280	0.00859375	5.5	0.34375
35	5-640	0.0078125	5.	0.3125
36	9-1280	0.00703125	4.5	0.28125
37	17-2560	0.00664062	4.25	0.26562
38	1-160	0.00625	4.	0.25

status is the United States Standard Gauge, established by act of Congress in 1893. This table is based upon the fact that one cubic foot of iron weighs 480 pounds. A sheet of iron one foot square and one inch thick will weigh therefore 40 pounds or 640 ounces, and conversely a plate one foot square and weighing one ounce would measure 1/640 of an inch in thickness.

The scale in the United States Standard Gauge is devised so that each gauge number represents a piece of metal having a certain weight in ounces per square foot and the same number of 640ths of an inch in thickness. Note, for example, that No. 14-gauge metal is 5/64 or 50/640 inches in thickness and weighs 50 ounces per square foot.

It will be noted from the above table that, although the difference in thickness between successive gauge numbers is extremely small, the percentage increase in weight for the corresponding gauge numbers is comparatively great. For example, the difference in thickness between 16 and 18 gauge is only 1/80 of an inch (too minute for accurate field determination), yet the 16-gauge metal weighs 40 ounces per square foot and the 18 gauge weighs 32 ounces per square foot, a difference of 8 ounces or 25 per cent in weight.

For these reasons it is evident that the only satisfactory manner of determining the gauge of sheet metal lies in weighing the sample and ascertaining its unit weight and referring this unit weight to the table. A tolerance of 2½ per cent in weight either way is permissible under the Standard Gauge Law.

One very practical application of this method of determining gauge values is in the case of corrugated-iron culverts.

The following table prepared by the manufacturers of Armco Culvert shows the minimum correct weight of culvert per lineal foot of pipe for standard diameters and gauges. It is only necessary to obtain the weight of a section of culvert per lineal foot of pipe and refer this value to the table in order to obtain the accurate gauge of the metal of which the culvert is composed. In using this table as a basis for checking gauges in material of this character the following points should be kept in mind.

Appreciable unit underweight indicates that the culvert pipe may, in addition to being under gauge, be deficient in one or more of the following necessary properties: required overlap at seams and joints, standard number, spacing and size of rivets, or the specified 2 ounces per square foot of zinc coating as called for in the United States Standards. These requisite qualifications should be checked and inspected separately.

CORRECT WEIGHTS FOR FULL GAUGE CORRUGATED METAL CULVERTS, STANDARD GAUGES

DIAMETER IN INCHES	WEIGHT IN POUNDS PER LINEAL FOOT OF FINISHED PIPE			
	16 gauge	14 gauge	12 gauge	10 gauge
10	9.04	11.13		
12	10.57	13.02		
15	12.88	15.86		
18	15.42	12.99	26.26	
21	17.95	22.13	30.58	
24	19.73	24.32	33.63	42.93
30		31.06	42.76	54.50
36		37.02	50.98	65.01
42		42.96	59.20	75.51
48		50.10	68.96	88.02
54			77.23	98.55
60			85.55	109.09
66			93.82	119.65
72			102.09	130.22
78			110.35	140.76
84			118.62	151.31

Announcements

Sheffield A. Arnold, landscape architect, Boston, Mass., announces the removal of his office to 230 Clarendon Street.

Henry S. Lion, architect, 75 West 47th Street, New York, announces his removal to temporary offices at 205 West 39th Street, and that he will be located later in permanent and larger quarters at 501 Seventh Avenue.

T. E. Bassham and L. L. Howenstine, formerly with Charles W. Dawson, architect, announce the formation of a partnership for the practice of architecture under the firm name of Bassham & Howenstine, architects, 702 Commercial National Bank Building, Muskogee, Okla.

Batey & Halloran, formerly of Huntington, West Virginia, wish to announce that they have opened offices at 540 North Seventh Street, Steubenville, Ohio. Manufacturers' samples requested.

George I. Lovatt, A.I.A., architect, announces the removal of his offices to 223 South Sydenham Street, Philadelphia, Penn., on December 1, 1923.

Frank H. Davis Company, general building contractors, have moved their offices from the Penobscot Building to 8471 Mackie Avenue, Detroit, Mich.

Francis C. Pinto, architect, 338 Metropolitan Ave., Brooklyn, would like to receive manufacturers' catalogues.

Samuel Lewis Malkind and Martyn N. Weinstein, architects, formerly of 16 Court Street, Brooklyn, wish to announce the removal of their offices to the new Chanin Building, 105 Court Street, Brooklyn. Manufacturers' catalogues and samples requested.

Bernard Herzbrun, A.I.A., announces the removal of his offices to 135 West 42d Street, New York City, and would be pleased to receive manufacturers' cards and catalogues at that address hereafter. Mr. Herzbrun will practice interior decoration as well as architecture.

The Winners of the Contest Page in the October issue were:

Lyman Farwell, Los Angeles: 1st prize—$50.

N. G. Walker, Rock Hill, S. C.: 2d prize—$25.

L. T. Brush, of the office of Clinton MacKenzie, New York: 3d prize—$15 worth of architectural books published by Charles Scribner's Sons.

Leo J. Sharp, Berkeley, Calif.: 4th prize—$10 worth of books published by Charles Scribner's Sons.

ROUEN—TOUR DE BEURRE.

Drawing by M. A. Spencer.